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SURGERY OF THE ADRENALS

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The purposes of surgery of the human adrenal glands are to remove neoplasms of these structures or to abolish functional activities which are deleterious to the organism; both conditions may be coeval. The principle of abolition of dangerous physiological functions of the adrenals, of course, is the opposite to stimulation of these glands by a corticotrophic agent, for example, corticotrophin (ACTH). There are several clear indications for the removal of nonneoplastic adrenals at present; no doubt more will be found, and the subject will assume greater importance. Frequently disease conditions caused by adrenal hyperfunction or those mediated through normal activity of these glands can be cured or alleviated by surgical procedures, with impressive results.

Adrenal surgery is now in a fast-moving evolutionary stage. Recently there have been four major developments in this area. These are (*a*) methods of maintenance of life in the absence of the adrenal glands or in adrenal insufficiency; (*b*) highly valuable diagnostic procedures for the assay of adrenal functions; (*c*) improved technical surgery of the adrenals, and (*d*) experimental production of adrenal cortical tumors.

The present paper is a brief and necessarily incomplete survey of the indications for surgery of the adrenals and includes a statement of the technical aspects of the operation and the essential medical management thereafter.

PATHOLOGICAL PHYSIOLOGY OF THE ADRENAL

During embryonic life mesodermal cells in the region of the wolffian body near the genital ridge grow out and encase cells of the sympathetic nervous system derived from ectoderm to form the adrenal cortex and medulla respectively. Many of the medullary cells bind chromate ion strongly (chromaffin tissue) while others resemble sympathetic ganglion cells.

The most striking clinical effects of medullary hyperfunction are sympathomimetic, chiefly vasopressor in type. Two hormones, l-epinephrine and l-norepinephrine [1] have been isolated from the adrenal medulla and from pheochromocytomas.[2] Both substances cause elevation of systolic blood pressure but differ in certain other respects. In brief, the administration of l-epinephrine causes little change in diastolic pressure, a decreased peripheral resistance, increased cardiac output, and tachycardia; l-norepinephrine causes elevation of diastolic pressure, increased peripheral resistance, and usually bradycardia.[3] Goldenberg [4] has postulated that the rather wide range of symptoms observed in patients with pheochromocytoma is explainable on the basis of the varying amounts of l-epinephrine and l-norepinephrine, respectively, secreted by the tumor.

The normal adrenal cortex is rich in ascorbic acid and in lipids, including cholesterol and other steroids, of which many have been isolated. Of greatest significance in cortical hyperfunction is the elaboration of androgens, estrogens, and corticoids, such as the 11-oxygenated steroids (cortisone; 17-hydroxycorticosterone). Significant amounts of compounds of these types have been found in extracts of the adrenal cortex or the urine of patients with cortical tumors. Cortisone has some effect on nearly every tissue,[5] exerting strong effects on the metabolism of carbohydrate and protein, but it has much less influence on electrolyte and water balance.[6]

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As Kenyon [7] has pointed out, certain signs and symptoms of adrenal tumors have been reproduced to some extent by the administration of pure steroids; (*a*) hypertension by desoxycorticosterone acetate (doca®); (*b*) sodium and water retention by desoxycorticosterone acetate and cortisone; (*c*) diabetes and nitrogen loss by cortisone; (*d*) nitrogen gain and somatic growth by testosterone; (*e*) masculinization and feminization (with depression of gonadal function) by androgens and estrogens respectively, and (*f*) atrophy of the adrenal cortex, contralateral to that involved by a neoplasm, by cortisone.

It is unlikely that the endocrine effects induced by an adrenal cortical tumor are evoked by a single hormone or in many cases by a single class of endocrine compounds so that mixed clinical syndromes are encountered depending on the combinations of the various types of hormonal agents involved.

ADRENAL CORTICAL TUMORS

Experimental Induction.—Provided the hypophysis is present, the absence of gonadal hormones in certain species of animals results in hyperfunctioning cortical neoplasms. The pituitary seems to be essential to any cortical hypertrophy.[8] The brilliant discovery of Woolley and Little [9] elucidated a mechanism for inducing these tumors. They employed the simple method of gonadectomy soon after birth in susceptible strains of mice, which resulted in the development of benign or malignant tumors; the incidence of tumors in the mice has been as high as 100%, and the tumors may involve one or both adrenal glands. The tumors are preceded by hyperplasia of the cortex; they metastasize and are transplantable for many generations. The neoplasms can produce androgenic or estrogenic hormones. The tumors may be prevented by administration of estrogen [10] to the castrate mice, apparently as a result of pituitary inhibition. Cortical adenomas also have been produced by the early castration of guinea pigs.[11]

In humans with cortical tumors there is evidence of pituitary abnormalities. Cushing [12] drew attention to the frequency of basophilic adenomas in the pituitary in certain states of human adrenal hyperfunction; however, it is now known that these adenomas are not prerequisite to the condition.[13] Crooke [14] discovered that in the hyperadrenocorticism of Cushing's syndrome the pituitary basophils lose their granules and develop hyaline changes; these Crooke cells apparently are invariably present in adrenal tumors with corticoid effects.[15]

Adrenal Tumors with Androgenic Effects.—Virilism, or the adrenogenital syndrome, results from these benign or malignant tumors, which seem to occur exclusively in young persons. Wilkins [16] collected from the literature 70 cases of adrenal tumors in childhood, 53 girls and 17 boys. Thirty-one of the girls and 12 boys suffered from virilism. Characteristic findings in virilism are an abnormally rapid rate of skeletal growth and dentition, strong and well-developed musculature, a deep voice, precocious development of pubic hair, and growth of the penis (clitoris). In adolescent girls amenorrhea develops.

Chemical analysis of the urine has diagnostic significance in these cases. Usually there is an increased excretion of 17-ketosteroids.[17] The amount of androgens is often greatly increased, as indicated by comb-growth assay methods.[18] The androgens dehydroisoandrosterone [19] and isoandrosterone [20] have been isolated from the urine in large amounts. The estrogenic and gonadotrophic levels are not increased.[18a]

Adrenal Tumors with Estrogenic Effects.—Wilkins [16] found 12 cases of feminizing tumors in males in the literature up to 1948; all were between 26 and 44 yr., except 2 boys, aged 6 and 15 yr. Most of the tumors are highly malignant neoplasms. The most evident clinical findings are mammary hypertrophy and, in adults, gonadal atrophy with impotence. A girl, aged 2 yr., had menstrual periods.[21]

The urinary estrogens may be normal [16] or greatly increased in quantity. The urinary estrogen in the case of Simpson and Joll [22] was estrone. In a case studied by us there was a great increase of 17-ketosteroids in the urine, but the level of urinary estrogen was not abnormal (Fig. 1).

Adrenal Tumors with Corticoid Effects.—Albright [23] made the penetrating analysis ascribing the usual symptom complex in Cushing's syndrome to excessive production of corticoids (the "sugar hormone") that promote the conversion of protein into glucose (gluconeogenesis) and interfere with protein synthesis as an "anti-anabolic effect."

Adrenal tumors with Cushing's syndrome may be benign or malignant. They occur most commonly in young women [12]; until 1939 only two occurrences had been reported in men.[17a] There is characteristically a uniform clinical ensemble. Fraser and others [17c] state: "By Cushing's syndrome is meant a definite disease picture, the most distinguishing features of which are muscular weakness, atrophy of the skin, osteoporosis, . . . hirsutism without other evidence of virilism, insulin-resistant diabetes, and amenorrhea or impotence." Striking features

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17. (*a*) Crooke, A. C., and Callow, R. K.: The Differential Diagnosis of Forms of Basophilism (Cushing's Syndrome) Particularly by the Estimation of Urinary Androgens, Quart. J. Med. **8**: 233-249, 1939. (*b*) Wilkins.[16] (*c*) Fraser, R. W.; Forbes, A. P.; Albright, F.; Sulkowitch, H., and Reifenstein, E. C.: Colorimetric Assay of 17-Ketosteroids in Urine; Survey of Use of This Test in Endocrine Investigation, Diagnosis, and Therapy, J. Clin. Endocrinol. **1**: 234-256, 1941.

are the "moon" face, the "pig" eyes, the purplish cutaneous striae, and the "buffalo" type of obesity involving the head, neck, and trunk while sparing the extremities. Polycythemia, leukopenia, and a decreased resistance to infection are common. Many patients have psychosis.[24] Occasionally the syndrome is abnormal in that it is complicated by a strong androgenic component.[25]

In the urine markedly increased values of 17-ketosteroids are often encountered [26] and androgens likewise, as determined by growth of the combs of capons.[17a] A great variety of classes of steroids has been isolated from the urine of a single patient.[27] Appreciable quantities of 17-hydroxycorticosterone were isolated by Mason and Sprague,[28] which supports the postulate of Albright that corticoids are involved significantly in the pathogenesis of the disease. Frank [29] discovered extremely large quantities of estrogen, unaccompanied by an increase of gonadotrophin, in the urine of four patients with Cushing's syndrome caused by cortical cancer.

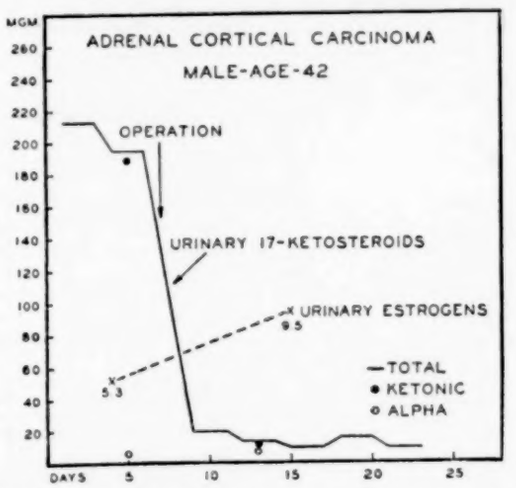

Fig. 1.—Daily excretion of 17-ketosteroids and estrogen in the urine of a male with a feminizing adrenal cortical carcinoma. The assays were made by Dr. William W. Scott.

The Cushing syndrome is not only produced by neoplasms but often results from bilateral adrenal hyperplasia. There is no certain method for differentiating between these conditions unless a tumor can be palpated or visualized by radiography. The presence of the characteristic symptom complex, in any event, is an indication for surgical exploration of the adrenals.

The results of operation in Cushing's syndrome are usually excellent,[24a] as in the first case in which operation was successfully performed by Collett.[30] After successful surgical treatment the abnormal hair falls out within a few days, the hypertension rapidly recedes (Fig. 2), and usually all symptoms and signs soon disappear.

ADRENAL MEDULLARY TUMORS

Sympathetic Ganglion Tumors.—These tumors are often malignant, especially in childhood,[31] and metastasize early. They are frequently discovered only when a nontender abdominal mass is observed. The treatment by surgery and irradiation is generally unsatisfactory.

Pheochromocytoma.—On analysis the l-norepinephrine content of these tumors has ranged from 0.95 mg. to 6.96 mg. per gram,[32] while the content of l-epinephrine varied from 0.03 to 6.5 mg. per gram.

The symptoms usually seen are those of either paroxysmal or persistent hypertension, the former syndrome being more frequently recognized. The attacks may be frequent or widely spaced. In a paroxysm the patient usually complains of precordial discomfort, palpitation, sweating, excitement, weakness, headache, labored breathing, and choking. Often the patients are incapacitated. The blood pressure is extremely high during the paroxysm.

The diagnosis of pheochromocytoma, as with all disease, is dependent on the physician's awareness of the symptom complex; commonly there is an absence of symptoms and signs at the time of examination. A tumor may be palpable, and sometimes during palpation of it an attack can be elicited. Detection of hypertension during an attack is important for diagnosis. The physician should be aware that chronic hypertension may be caused by a pheochromocytoma.

Certain tests of diagnostic value have been described recently: (*a*) The adrenergic-blocking agent piperoxan (2-[1-piperidylmethyl]1,4-benzodioxan) causes a considerable decrease in systolic and diastolic blood pressure after intravenous administration.[33] (*b*) In certain cases in which a patient with pheochromocytoma is in a normotensive phase, the injection of 25 γ of histamine base results in a striking hypertensive response.[34]

The first successful operation for pheochromocytoma was performed by C. H. Mayo,[35] and the first patient in whom the diagnosis was correctly made before exploration was operated upon by Shipley.[36] After removal of these tumors the patient usually obtains immediate and permanent relief.

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SURGICAL TECHNIQUE

Denervation of the adrenals was extensively studied by Crile,[37] who reported improvement in patients with hyperthyroidism, peptic ulcer, diabetes mellitus, epilepsy, and other diseases; however, this procedure has been abandoned except as it is incident to thoracolumbar sympathectomy. The only operations now carried out on the adrenal are the removal of tumors, partial resection of the gland, and complete removal of one or both adrenals.

The technical problem in adrenal surgery is to secure adequate exposure, since these little glands are tucked high under the diaphragm. All possible anatomic approaches seem to have been employed to circumvent that surgical obstacle—the bottom of the costal cage. These incisions include the anterior abdominal incision, either longitudinal or transverse; the anterior subcostal [38]; the lateral subcostal [39]; the posterior vertical [40]; the posterolateral,[41] and transthoracic.[42]

We find that the posterolateral approach gives incomparably the best exposure. The operation is done under spinal anesthesia. The patient lies in the lateral position commonly employed in operations on the kidney, with the head and foot of the operating table lowered. An incision 20 to 25 cm. long is made in the loin over the 12th rib, which is resected; the fascia of Gerota is incised. The upper pole of the kidney is the key to finding the adrenal. The orange-yellow base of the adrenal is visualized, and the gland identified by palpation. The right adrenal rides on the shoulder of the liver, while the left hugs the posterior peritoneum. The adrenal glands are held in place by a number of fine strands of tissue, like guy wires, which are dissected under direct vision with scissors. Usually none of these strands needs ligation except the principal adrenal vein, which is rather larger (about 4 mm. in diameter) than the other suspending structures. The vein is found on the anterior surface of the adrenal at the junction of the middle and lower thirds of the gland, where it may be readily identified by palpation; a hemostatic forceps is applied and the vessel is sectioned. When hemostasis is secured by ligation and the gland has been excised, the wound is closed.

In case of operation on both adrenals at the same sitting, we turn the patient on the opposite side, redrape him with sterile linen, and proceed as just described. It is important in bilateral operations on the adrenals to administer fluids intravenously. When the patient is obese, an incision is made over the internal saphenous vein at the ankle, and a cannula is inserted in this vein.

MEDICAL MANAGEMENT INCIDENT TO ADRENAL SURGERY

In adrenal surgery we agree with Walters and Kepler [21] that "the most important factor in surgical therapy . . . is the anticipation, prevention and control of postoperative adrenal cortical insufficiency." Remarkable advances have been made recently, so that the patient without adrenals can be supported in good health for long periods

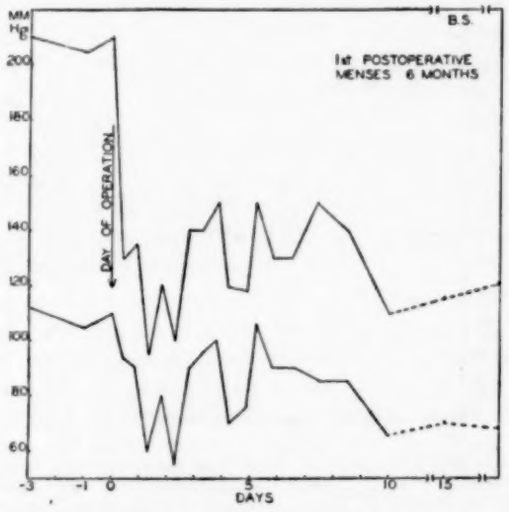

Fig. 2.—Effect of removal of a benign adrenal tumor on the blood pressure of a woman with Cushing's syndrome.

of time. Until the last decade the mortality from extirpation of hyperfunctioning adrenal tumors was very high (30% as reported by Cecil [43] in 1933), especially in patients with Cushing's syndrome [15] and virilism.[44] An atrophic adrenal usually exists contralateral to a cortical adrenal tumor. In several cases [45] an adrenal gland could not be found at necropsy on the side opposite to that operated upon for cortical tumors.

An improved understanding of the physiology of the human adrenal gland and the availability of steroid hormones, especially desoxycorticosterone acetate and cortisone, have revolutionized the management of patients after adrenal operations, where adrenal insufficiency is particularly dangerous to life. From the practical standpoint insufficiency must be forestalled—it is rarely cured when it has developed immediately after operation. It is a safe rule in any proposed extirpation of the adrenal to treat the patient in advance as if insufficiency were certain to develop postoperatively and to withdraw the essential medicines slowly, when possible, in the days after the operation.

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33. Goldenberg, M.; Snyder, C. H., and Aranow, H., Jr.: New Test for Hypertension due to Circulating Epinephrine, J. A. M. A. **135**: 971-976 (Dec. 13) 1947. Goldenberg, M., and Aranow, H., Jr.: Diagnosis of Pheochromocytoma by the Adrenergic Blocking Action of Benzodioxan, J. A. M. A. **143**: 1139-1143 (July 29) 1950.

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40. Young, H. H.: A Technique for Simultaneous Exposure and Operation on the Adrenals, Surg., Gynec. & Obst. **63**: 179-188, 1936. Crile.[37]

The most critical test for postoperative therapy follows bilateral adrenalectomy, and a program of treatment has been devised so that this heroic ordeal may be endured with little danger. By the use of this program bilateral adrenalectomy has been carried out consecutively in eight patients without fatality, and an addisonian crisis was not encountered. The most important factors in prophylaxis of surgical adrenal insufficiency seem to be administration of adequate quantities of cortisone and desoxycorticosterone acetate (Table); replacement, by transfusion, of blood lost at operation; maintenance of systolic blood pressure, when levels below 100 mm. of mercury are encountered, by slow intravenous injection of vasopressor substances, such as l-norepinephrine (10 γ of free base per 1 cc. of 0.9% sodium chloride). We are of the opinion that the intravenous injection of massive amounts of fluid is harmful; the total amount of fluid injected during the first postoperative day should be small and perhaps should not exceed 1,500 cc. Acetylsalicylic acid (0.6 gm. by mouth) is given when the temperature is 38 C. or higher. We have not found it necessary to administer aqueous adrenal cortical extracts.

Substitution Therapy for Total Adrenalectomy

0 Minus 1 Day		
Cortisone acetate *	50 mg.	6 a. m., 12 noon; 6 p. m., 12 midnight
Desoxycorticosterone acetate *	5 mg.	6 a. m.
Sodium chloride *	5 gm.	6 p. m.
0 Day (Day of Operation)		
Cortisone acetate	150 mg.	7 a. m.
Desoxycorticosterone acetate	5 mg.	7 a. m.
Operation †	.....	8 a. m.
Cortisone acetate	50 mg.	Every 4 hr.
0 Plus 1 Day		
Cortisone acetate	50 mg.	Every 6 hr.
Desoxycorticosterone acetate	5 mg.	1 injection
Sodium chloride	3 gm.	by mouth
0 Plus 2 Days		
Cortisone acetate	50 mg.	Every 12 hr.
Desoxycorticosterone acetate	0-3 mg.	As needed
Sodium chloride	3 gm.	
Subsequent Days		

The dosage of steroids is gradually reduced until the sustaining dose of cortisone acetate (25 to 50 mg. daily) is reached about one week after the operation; desoxycorticosterone acetate is not required for maintenance therapy.

* The cortisone acetate and desoxycorticosterone acetate were administered throughout by intramuscular injection and the sodium chloride by mouth.

† Five hundred cubic centimeters of 0.9% sodium chloride and 500 cc. of plasma are injected intravenously during operation, and 10 γ of norepinephrine per cubic centimeter is injected when systolic blood pressure falls below 100 mm.

The maintenance dosage of cortisone acetate (37.5-50 mg. per day by mouth) is usually instituted on the sixth postoperative day; it is not necessary to administer desoxycorticosterone acetate. The patient supplements his diet by ingesting 2 to 4 gm. of sodium chloride daily.

REMOVAL OF NONNEOPLASTIC ADRENALS

Unilateral Adrenalectomy. — The removal of one adrenal gland in the presence of its normally functioning mate in our experience and that of others [46] has not produced an appreciable functional or therapeutic effect. We have performed this unilateral operation twice for essential hypertension and likewise for Cushing's syndrome without benefit to the patient. Fontaine [47] has reported beneficial results following this procedure in five in a series of 11 patients with thromboangiitis.

Bilateral Partial Adrenalectomy. — Adrenal Hyperfunction: After partial resection of both adrenals in two patients with virilism, Young [48] reported early improvement. Recently, Priestley and co-workers [49] reported on their experiences with subtotal adrenalectomy in a series of 29 patients with Cushing's syndrome due to adrenal hyperplasia. In 19 patients excellent remission from the disease was obtained.

Hypertension: There is considerable evidence implicating the adrenal glands in certain types of hypertension; for example, hypotension is a constant feature of Addison's disease, while certain adrenal tumors, both cortical and medullary, cause hypertension. These and other considerations have led to attempts to modify chronic hypertension (not due to adrenal tumors) by adrenalectomy. Neuhof [46a] observed a distinct reduction in blood pressure with relief of symptoms in 13 patients with very severe hypertension following bilateral partial adrenalectomy combined with sympathectomy. Fontaine [47] employed the same procedures in 37 patients with persistent hypertension and stated that there were either good or excellent results in 20 patients. Green and co-workers [50] removed about 97% of the adrenals of a woman with incapacitating hypertension and observed an arrest of the renal lesions with a striking regression of the cerebral, retinal, myocardial, and vascular disturbances. Zintel and colleagues [46b] likewise have performed subtotal adrenalectomies in a series of patients with the severest grades of hypertension. They concluded conservatively: "In a limited follow-up period, it appears that subtotal adrenalectomy will produce some beneficial effects on the objective and subjective signs and symptoms as well as a variable reduction in the blood pressure of hypertensive patients."

Subtotal adrenalectomy at this time has pitfalls relating to the fragment of adrenal left: Will the remnant survive at all, or will it hypertrophy and maintain the pristine disease? In the series of patients with Cushing's syndrome reported by Priestley and colleagues,[49] both difficulties were encountered. In three of their patients

41. Walters and Kepler.[21] Holmes.[24a]

42. Broster, L. R.; Allen, C.; Vines, H. W. C.; Patterson, J.; Greenwood, A. W.; Marrian, G F., and Butler, G. C.: The Adrenal Cortex and Intersexuality, London, Chapman & Hall, Ltd., 1938.

43. Cecil, H. L.: Hypertension, Obesity, Virilism and Pseudohermaphroditism as Caused by Suprarenal Tumors, J. A. M. A. **100**: 463-466 (Feb. 18) 1933.

44. Reilly, W. A.; Lisser, H., and Hinman, F.: Pseudo-sexual-precocity; The Adrenal Cortical Syndrome in Preadolescent Girls: Report of a Successfully Operated Case, Endocrinology **24**: 91-114, 1939.

45. Fordyce, A. D., Evans, W. H.: Suprarenal Virilism with a Report of Two Cases: Pathological Notes, Quart. J. Med. **22**: 557-566, 1929. Lukens, F. D. W.; Flippin, H. F., and Thigpen, F. M.: Adrenal Cortical Adenoma with Absence of the Opposite Adrenal: Report of a Case with Operation and Autopsy, Am. J. M. Sc. **193**: 812-820, 1937.

46. (*a*) Neuhof, H.: Gangliosympathectomy and Bilateral Hemiadrenalectomy for the Severest Grade of Hypertension, Ann. Surg. **128**: 787-790, 1948. (*b*) Zintel, H. A.; Wolferth, C. C.; Jeffers, W. A.; Hafkenschiel, J. H., and Lukens, F. D. W.: Subtotal Adrenalectomy in the Treatment of Patients with Severe Essential Hypertension, Ann. Surg., to be published. (*c*) Crile.[27] (*d*) Broster and others.[42]

47. Fontaine, R.; Frank, P., and Stoll, G.: The Surgery of the Adrenals, J. internat. chir. **9**: 362-377, 1949.

48. Young, H. H.: The Abnormalities and Plastic Surgery of the Lower Urogenital Tract, (Ramon Guiteras Lecture), J. Urol. **35**: 417-480, 1936.

49. Priestley, J. T.; Walters, W.; Sprague, R. G., and Salassa, R. M.: A Clinical and Physiologic Study of Subtotal Adrenalectomy for Cushing's Syndrome (A Preliminary Report of 29 Cases), Ann. Surg., to be published.

50. Green, D. M.; Nelson, J. N.; Dodds, G. A., and Smalley, R. E.: Bilateral Adrenalectomy in Malignant Hypertension and Diabetes, J. A. M. A. **144**: 439-443 (Oct. 7) 1950.

adrenal insufficiency developed, while in three others there was some recurrence of the Cushing syndrome.

Bilateral Total Adrenalectomy. — Hypertension: Thorn, Harrison, and Criscitiello [51] reported on 12 patients with very severe hypertension with associated cardiovascular and renal disease. Of these, eight patients have survived for a long enough period to evaluate the effect of the maintenance hormone therapy on the course of the disease. Of these eight, four have shown great symptomatic relief with a significant reduction in blood pressure.

Cancer: The first successful total adrenalectomy in man was performed in this clinic [52] in 1945 for metastatic cancer of the prostate [53] in a man who was in a relapse after a remission induced by antiandrogenic control. A retardation in the rate of growth of the neoplasm was observed in this patient, but adrenal insufficiency developed since cortisone and similarly active compounds were unavailable at that time. Cox [54] performed subtotal adrenalectomy in a patient with paraplegia occurring from prostatic cancer; a brief remission resulted.

With the availability of cortisone, the influence of the adrenals in men with widespread metastatic cancer of the prostate has been reinvestigated on an exploratory basis. Recently two patients have been observed for very brief periods since operation, namely, for five and six months respectively. Prior to bilateral adrenalectomy a remission occurred in both patients induced by the standard antiandrogenic measures of orchiectomy and the administration of estrogen. Subsequently, each had suffered a relapse characterized by, a general decline in weight and strength accompanied by great pain, which required sedatives many times daily; one patient was bedridden. After adrenalectomy with maintenance cortisone therapy, a clinical remission occurred in each patient characterized by immediate and persistent loss of pain and a gain of more than 25 lb. (11.3 kg.) in weight. Both of these patients have returned to work. Despite the impressive nature of the clinical remissions, it should be emphasized that the number of cases is very small and the duration of observation since operation is exceedingly short.

SUMMARY

The removal of excessively functioning tumors of the adrenals leads to gratifying results. The extirpation of nonmalignant adrenal glands is still in an exploratory phase. Patient's with Cushing's disease due to adrenal hyperplasia and hypertension of certain types have been benefited. Although the period of postoperative observation has been exceedingly brief, in two patients with very advanced cancer of the prostate a clinical remission of the disease occurred after adrenalectomy with maintenance cortisone therapy.

It is true that, through science, it is now possible to anticipate or to overcome human adrenal insufficiency effectively by simple and relatively inexpensive methods. However, very extensive or complete removal of adrenal tissue may lead to Addison's disease. Before adrenalectomy is carried out, the physician is faced with a grave decision: Do the chances of the therapeutic rewards counterbalance the certainty of long continued hormonal-replacement therapy and the constant danger of the development of Addison's disease? Adrenal surgery must never be embarked upon lightly.

950 E. 59th St.

51. Thorn, G. W.; Harrison, J. H., and Criscitiello, M. G.: Personal communication to the author.

52. Huggins, C., and Scott, W. W.: Bilateral Adrenalectomy in Prostatic Cancer: Clinical Features and Urinary Excretion of 17-Ketosteroids and Estrogen, Ann. Surg. **122**: 1031-1041, 1945.

53. The medical management in this patient[52] who survived nearly four months after the operation was due to Professor George W. Thorn, who was the first to suggest a successful regimen by which man could be maintained postoperatively without adrenals and be free from addisonian crisis.

54. Cox, H. T.: Adrenalectomy and Prostatic Carcinoma: Report of Three Cases, Lancet **2**: 425-426 (Sept. 20) 1947.

RESULTS OF PROPYLTHIOURACIL THERAPY FOR HYPERTHYROIDISM

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This article is based on a study of patients treated for hyperthyroidism with propylthiouracil and is concerned chiefly with the ability of such treatment to produce remissions. It also deals with certain advantages and disadvantages related to the over-all clinical handling of the disease by this method. The final decision as to the permanency of remissions would imply following each patient throughout his life. The patients discussed here have almost all been followed for 24 months or less.

The patients studied started treatment between January, 1946, and April, 1947. A total of 179 such hyperthyroid patients were followed. During the same interval of time, 71 additional patients were treated with propylthiouracil, but they could not be included in this survey for various reasons; they were patients who were undergoing trial therapy of arterial hypertension; patients with angina pectoris or congestive failure without hyperthyroidism, and patients who were observed only once and whose treatment was subsequently managed by the referring physician elsewhere.

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DOSE

Propylthiouracil was used in the beginning in doses now considered inadequate in most instances. The dose varied considerably, but in almost all patients it eventually exceeded 200 mg. and later 300 mg. a day. Two patients failed to respond to 400 mg. per day.

Early in our experience with propylthiouracil in the treatment of toxic diffuse goiter (Graves's disease) it was found that the vascularity of the thyroid commonly increased during therapy and that the accompanying thrill

and bruit could be quickly eliminated by administration of 10 to 20 mg. of iodine a day. More recently iodine has been used concurrently throughout the entire period of propylthiouracil treatment.

In some patients the basal metabolic rate tends to fall to abnormally low levels and clinical signs of hypothyroidism appear. This should be avoided, since on theoretical and experimental grounds such a state would stimulate the production of pituitary thyrotropic hormone and thus stimulate the further enlargement of the existing goiter in clinical hyperthyroidism. Such a state might increase the possibility of recrudescence of the hyperthyroidism after withdrawal of the antithyroid drug, although this has not been proved.

In some patients the dose of antithyroid drug which gives complete control of hyperthyroidism and that which does not control differ by only a narrow margin. If hypometabolism occurs, an increase in thyrotropic hormone production would be expected. If the dose of antithyroid drug is decreased drastically early in treatment, recurrence of the hyperthyroidism would be likely. To those patients whose basal metabolic rate falls below zero on relatively small amounts of propylthiouracil we have considered it prudent to give desiccated thyroid concurrently in sufficient doses to maintain a relatively euthyroid state without relaxing control of the overactivity of the gland. For similar theoretical reasons it may prove good practice in the future to continue thyroid feeding for some time after propylthiouracil is withdrawn.

Among the 179 patients treated for hyperthyroidism and adequately followed, there were two groups of 38 patients who could not be included in a survey calculated to establish the success or failure of this treatment as a curative measure. In the first group (27 patients) the drug was used to control hyperthyroidism in preparation for surgery alone. This use of propylthiouracil is eminently successful. In the second group the curative effect of the treatment cannot be estimated because administration of the drug was never discontinued. The chief reason for this was that these patients were considered unsuitable for surgery even though the hyperthyroidism was well controlled (Table 1). The drug was well tolerated, its use entailed little inconvenience, and, since we hesitated to risk exacerbation, administration of the medication was not stopped. For three of these patients the drug was prescribed repeatedly elsewhere. Treatment may be considered successful in this group from the standpoint of control of the hyperthyroidism.

Although it was not the original intention to continue antithyroid medication indefinitely, long-continued administration of the drug in these cases demonstrates that it may be used in this way if circumstances warrant. Our present practice is to discontinue therapy after hypermetabolism has been completely controlled for about one year. In the event of recurrence, radioactive iodine or surgery is prescribed.

In 141 patients who have been followed, therapy was planned with the idea of producing a permanent remission after withdrawal of treatment. In the majority of those who had Graves's disease, 10 to 20 mg. of iodine was given daily, usually calcium iodostearate (stearodine®), 1 or 2 tablets a day, concurrently from the beginning of treatment. It had previously been demonstrated that iodine in this dosage neither accelerates nor retards the effect of propylthiouracil in Graves's disease in any degree clinically important. Whether or not it may have a bearing on the final remission rate following withdrawal of treatment is not known. In Table 2 data are presented to show the results actually obtained.

Among the patients in whom we failed to produce a remission are 18 in whom satisfactory control was never achieved for one reason or another, as indicated. These 18 patients are included among those showing

TABLE 1.—*Associated Conditions Contraindicating Surgery in Hyperthyroidism*

Reason	Number of Cases
Congestive cardiac decompensation plus auricular fibrillation	2
Cardiac decompensation (rheumatic)	1
Angina pectoris	1
Postoperative tetany	1
Senility	1
Dwarfism and diabetes mellitus	1
Drug prescribed elsewhere	3
Condition not stated by patient or referring physician	1
Total	11

failure of control or relapse in most of the data which follow. The reader should realize that these failures are, for the most part, not to be considered failures of the drug. If we are willing to accept as a fact that at least 11 of these patients actually did have inadequate doses, then the figures could be handled in a different way. In the future it might be assumed that approximately half of these patients would be in the remission group, thus changing the figures for all cases treated to 75 in remission and 66 as relapse or failure to control.

REMISSION

Remission, as we have referred to it in this paper, implies complete freedom from symptoms and signs of hyperthyroidism, and a basal metabolic rate of less than

TABLE 2.—*Unsatisfactory Results of Concurrent Use of Iodine With Propylthiouracil in Graves's Disease*

Cause	Number of Patients	Dose Mg./Day	Comment
Failure of drug	2	400	Would higher dose levels have been effective?
Inadequate dose	2	50-75	One recurred after subsequent thyroidectomy
	5	200	.....
	4	300	.....
Toxicity preventing use	1	...	Leukopenia
	1	...	Dermatitis exfoliativa
Poor co-operation	3	Irregular use of drug	One patient subsequently controlled on 400 mg./day methylthiouracil
Enlargement of the gland in 2	..	...	.....

+ 10%. A patient was not considered as having experienced remission if symptoms persisted, especially if the basal metabolic rate was rising, even though it was not as high as + 10%. In deciding which patients should be considered in remission, duration of administration of the drug was irrelevant, provided that complete control of the hyperthyroidism was obtained for even a short period of time. It is quite possible that more prolonged use might have influenced results, even though a second or third trial of the drug had been made and might have

been followed by remissions of three or more months' duration. Relapses are recorded as such if one relapse occurred, whether or not good control was obtained later. Relapse signifies a rise in basal metabolic rate to + 10% or above, with recurrence of symptoms of hyperthyroidism after the drug has been discontinued.

Of the group of 141 patients in whom an attempt was made to induce permanent remission, regardless of the type of goiter (diffuse, nodular, or recurrent), there were 70 patients in remission and 71 in whom there was incomplete control, or relapse.

TABLE 3.—*Response to Propylthiouracil Therapy in Relation to Sex*

	Female		Male		
	No.	%	No.	%	Total
Remission	46	44.7	24	63.2	70
Relapse or failure to control	57	55.3	14	36.8	71
Total	103		38		141

TABLE 4.—*Proportion of Nodular and Diffuse Goiters in Men and Women in 141 Patients*

	Female	Male
Nodular	41%	16.6%
Diffuse (Graves's disease)	59%	83.4%

In an attempt to obtain more authentic criteria in the selection of patients for propylthiouracil therapy, the patients were examined with regard to the separate factors described below.

Sex.—The therapeutic responses relative to sex are shown in Table 3.

According to the figures in Table 3, remission rate is greater among men than among women. More complete study of the data, however, indicates that sex is not the only factor of importance in producing this apparent effect. It may be associated with the fact that nodular goiter is more prevalent in women, and such nodular goiters are less responsive to antithyroid drugs than are the diffuse goiters of Graves's disease. The proportion of nodular and diffuse goiters in men and women in this group is shown in Table 4.

TABLE 5.—*Age Distribution of Relapses and Remissions in 135 Cases of Hyperthyroidism**

Decade	Relapse and Failure to Control: No. of Cases	Remission Six Months or More	Remission Less Than Six Months
1	0	1	0
2	2	0	0
3	8	5	0
4	14	21	2
5	14	14	1
6	19	13	1
7	10	5	3
8	2	0	0

* The data were incomplete in six cases, thus only 135 are described in this table.

Age.—The distribution of relapses or failures and remissions in relation to age is shown in Table 5.

It is interesting to note from Table 5 that the failures are proportionately more common in patients over 50 years of age. It is important to call attention to the fact that seven of the patients over 50 who failed to show remission on propylthiouracil medication had previous postoperative recurrences. Only two such patients in this age group obtained remission. Another factor influencing the relapse rate is the prevalence in the older age group of nodular goiter, which responds less favorably than diffuse goiter. In short, age in itself does not appear to be a barrier to a good response to propylthiouracil.

Initial Basal Metabolic Rate.—Results of the separation of patients into two groups having basal metabolic rates of more or less than + 40% are shown in Table 6.

If the patients are considered in two groups, one in which the metabolic rates were + 30% or less and one in which they were + 50% or more, the results are shown in Table 7.

Thus our experience indicates that a patient with a high basal metabolic rate before treatment has a chance of permanent remission almost equally as good as that of a patient with mild hyperthyroidism.

Duration of Control Maintained by Treatment.—An attempt has been made to determine whether or not the long-continued control of hyperthyroidism under treatment materially influences the proportion of patients remaining in lasting remission after cessation of therapy.

TABLE 6.—*Results in Patients With Basal Metabolic Rates of More or Less Than Plus 40 Per Cent*

Basal Metabolic Rate	Relapse or Failure to Control	Remissions
40% +	27	24
Less than 40%	37	35

TABLE 7.—*Results in Patients With Basal Metabolic Rates of Plus 30 Per Cent or Less and Plus 50 Per Cent or More*

Basal Metabolic Rate	Relapse or Failure to Control	Remissions
+ 50% and above	14	13
+ 30% and below	22	27

Our figures do not show that a maintained remission for 12 mo. or more increases the length of post-treatment remission. If the patients not completely controlled are excluded, we find that in the group controlled under therapy for less than 12 mo., remissions were 62%, and failures 38%; in those controlled for 12 mo. or more remissions occurred in 61% and failures in 39%.

Rate of Response.—An early impression in this work indicated that patients who responded rapidly to treatment had a better chance to stay in lasting remission than those who responded slowly. Further experience and careful consideration of the facts at hand have not sustained this theory. For example, there were 12 patients in whom hyperthyroidism was not completely controlled until after four months of treatment, and who had recurrences within six months after cessation. There were eight others who came under control equally as slowly, who remained in remission longer than six months after treatment was discontinued.

Size of Goiter.—The size of the goiter appears to bear some relation to the possible remission following treatment. Of 71 relapses the approximate size of the gland was known in 56 patients. Among these there were 44 glands of small and medium size. Of 70 remissions there were 65 small and medium-sized glands. This appears

more significant in consideration of the fact that postoperative recurrences are represented mostly by small or medium-sized glands and in such recurrences propylthiouracil therapy is relatively unsuccessful.

Type of Goiter.—The type of goiter seems to have a distinct bearing on the result of therapy as outlined in Table 8.

TABLE 8.—*Relation of Type of Goiter to Propylthiouracil Therapy*

	Remission	Relapse or Failure to Control	Total
Diffuse (previously untreated)	47 (62%)	29 (38%)	76
Postoperative recurrent.....	8	18	26
Total diffuse glands.....	55	47	102
Nodular	12 (34%)	23 (66%)	35
Total	67*	70	137

* Note that the apparent discrepancy in the numbers 67 and 70 (70 and 71 elsewhere) is due to the fact that our data do not classify the type of goiter present in all patients.

Period of Remission.—The period of remission produced by propylthiouracil treatment is of prime interest in this problem. Of our group of 141 patients treated definitively with propylthiouracil, 70 are known to be in remission. The final duration of these remissions cannot be estimated accurately. However, their present duration is shown in Table 9.

TABLE 9.—*Existing Remissions*

Known Duration	Number of Patients
Less than 6 mo.....	8
6-12 mo.....	31
13-24 mo.....	25
25 or more mo.....	6
	70

It is instructive to compare the figures in Table 9 with those representing the span of time in remission in patients in whom relapses were known to occur and in whom the time of relapse was known, as shown in Table 10.

TABLE 10.—*Duration of Remission in Patients Having Relapse*

Months in Remission	Number of Patients
1.....	12
2.....	7
3.....	6
4.....	3
5.....	0
5-11.....	5
12 and over.....	3
	36

The fact that the majority of such relapses occurred before the fifth month adds significance to the number of remissions lasting more than six months and especially to those in remission 12 mo. or longer.

In summarizing, the best results have been obtained in Graves's disease, excluding postoperative recurrences. Failures are most frequent in patients with nodular goiter and in those with postoperative recurrences. In the latter group almost all show diffuse glands of Graves's disease, a fact which is acknowledged, but the difference in results between this group and the previously untreated cases of diffuse goiter has appeared so striking that we have placed them in a separate category in relation to this type of treatment.

RESPONSE OF IDEAL CANDIDATES TO PROPYLTHIOURACIL TREATMENT

In view of the previously mentioned findings it is interesting to determine the remission rate in a group of patients who were selected in retrospect as most likely to obtain permanent cure. These results, we believe, indicate the probable prospects with such therapy in patients selected in a similar manner.

The criteria for acceptance into this group were (1) the diagnosis of Graves's disease and (2) a small to moderate-sized goiter. Those few patients with Graves's disease and large goiters, those with postoperative recurrences, and those with nodular goiters were excluded. In addition, we might have accepted only persons in whom hyperthyroidism had been controlled for two months or longer. However, since we have been unable to make a concise correlation between relapse rate and the duration of control, this time factor is not considered here. There were 60 patients in this group. Fourteen (23.3%) experienced relapses, and 46 (76.6%) are in remission.

It is important to compare the rate of recurrence of hyperthyroidism after propylthiouracil therapy with recurrences following other types of treatment. In Graves's disease the recurrence rate after thyroidectomy varies from 5%[1] to 18%.[2] The latter figure is comparable with the average for the United States as a whole. In addition, we have learned that recurrences of activity in Graves's disease are not unknown after control with radioactive iodine. As of June, 1950, we had encountered four such patients known definitely to have had a relapse and two in whom relapse was strongly suspected. On the latter two we have no data which proves complete control, although the patients were symptom free and had attained a normal weight before exacerbation was observed. This represents a rate of recurrence in patients treated with I^{131} approximating 2%.

The outstanding advantage of a cure following the use of an antithyroid drug lies in the fact that the thyroid remains intact and there is complete freedom from the risk of such complications as recurrent nerve injury, parathyroid tetany, and lasting hypothyroidism. In short, a cure produced in this manner is the most physiological cure available.

SUMMARY

Of 179 patients with hyperthyroidism followed after treatment with propylthiouracil, an attempt was made to produce a permanent remission in 141.

In this group, regardless of type of goiter, adequacy of therapy or other influencing factors, 50% of the patients have remained in remission. Existing remission has lasted for from two months to over two years. Sixty-two of the 70 remissions have continued for more than six months. Most relapses which occur are seen earlier

1. Bertelsen, A.; Christensen, E.; Bruun, E., and Becker-Christensen, P.: Mortality, Operative Complications and Recurrence Frequency in Surgical Treatment of Thyrotoxicosis, Acta chir. scandinav. (supp. 133) **98**: 3, 1947.

2. Thompson, W. O.; Taylor, S. G., and Meyer, K. A.: Factors Influencing Operative Mortality in Exophthalmic Goiter, Ann. Int. Med. **8**: 350 (Sept.) 1934.

than five months. In patients in whom the time of relapse was accurately known, relapse occurred within four months in 28 of 36 cases.

Age, sex, or severity of hyperthyroidism do not appear to be essential factors in influencing the chances of lasting remission. The rate of response to a given dose of the drug and the duration of maintenance of control under therapy are not necessarily matters of importance in producing lasting remission. The type of goiter, however, is important.

Remission rate in Graves's disease in this series was 61.8%, and in nodular goiter only 34.2%.

Patients who have had one or more relapses following surgery are unlikely to attain a permanent cure after withdrawal of propylthiouracil.

In patients selected because of the presence of Graves's disease, small to moderate-sized goiters, and in whom complete control of hyperthyroidism had been maintained for more than two months, remissions were present in 76.6%.

Important advantages of a lasting remission after propylthiouracil or methylthiouracil therapy are the presence of an intact thyroid gland and freedom from lasting complications such as hypothroidism, tetany or laryngeal paralysis.

Propylthiouracil is distinctly beneficial, not only in preoperative preparation, but also in prolonged therapy for patients in whom surgical risk remains high, especially if radioactive iodine is not available.

This drug is also valuable as definitive treatment in selected cases of hyperthyroidism, especially in Graves's disease.

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COMPARISON OF AUREOMYCIN AND CHLORAMPHENICOL IN TREATMENT OF BACTERIAL PNEUMONIA

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and
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Pneumococcic pneumonia has been found to respond to aureomycin therapy in a manner comparable to that observed with penicillin. A rapid defervescence was noted in 31 of 33 patients treated by Gocke, Collins, and Finland,[1] and there were only two deaths, both occurring within 18 hr. after starting therapy. Dowling and others [2] reported a case fatality rate of 1.5% among 131 cases of pneumococcic pneumonia treated with aureomycin, as compared with a rate of 5.2% in 686 cases treated with penicillin.

Much less is known concerning the effectiveness of chloramphenicol in the treatment of pneumococcic pneumonia. This antibiotic has been reported by Bliss and Todd [3] to have little effect on the course of pneumococcic infections in mice. In man, however, clinical studies in a small number of patients have yielded encouraging results.[4]

The following study, carried out during the first six months of 1950, was undertaken to explore further the potentialities of these two antibiotics in the treatment of bacterial pneumonias occurring in adults. A comparison was made between the results obtained with aureomycin and chloramphenicol. In addition, the effectiveness of doses smaller than those usually employed was evaluated.

METHOD OF STUDY AND CLINICAL MATERIAL

From Jan. 1 to June 15, 1950, all adult patients admitted to the Infectious Disease Service of the King County Hospital with a diagnosis of pneumonia were treated with aureomycin or chloramphenicol.[5] One hundred and twenty-one patients were so treated. Of this total, 21 cases were discarded when review of the protocols revealed that they did not meet criteria for the diagnosis of early, untreated bacterial pneumonia, leaving a balance of 100 acceptable cases on which this report is based. Diagnosis of the 21 unacceptable cases were as follows: virus pneumonia, three; acute febrile infection, not pneumonia, six; intrathoracic neoplasm, three; tuberculosis, two; cardiac failure with pulmonary infarction, two; bronchiectasis without definite pneumonia, one; pneumococcic pneumonia admitted following the crisis, one; extensive treatment prior to admission, two, and bleeding peptic ulcer with bronchopneumonia, one. Of these 21 cases, four patients died, and all had postmortem examinations. Causes of death in these four as determined at autopsy were hematogenous tuberculosis, rheumatic heart disease with pulmonary infarction, bleeding peptic ulcer with bronchopneumonia, and carcinoma of the trachea with metastases.

Besides the routine laboratory studies, chest x-rays were taken, blood was drawn for culture, and a fresh sputum specimen was obtained prior to institution of therapy. The sputum was examined by direct smear (Gram's stain), streaked on a blood agar plate, and a direct typing was attempted. Sputum was also inoculated into mice, and typing was performed the following day from peritoneal washings.[6] Organisms which could not be

From the Department of Medicine, University of Washington School of Medicine, and the King County Hospital.

1. Gocke, T. M.; Collins, H. S., and Finland, M.: Aureomycin Treatment of Pneumococcic Pneumonia, Arch. Int. Med. **84**: 857 (Dec.) 1949.
2. Dowling, H. F.; Lepper, M. H.; Hussey, H. H.; Caldwell, E. R., and Spies, H. W.: The Treatment of Pneumococcic Pneumonia with Aureomycin, J. Lab. & Clin. Med. **35**: 215, 1950.
3. Bliss, E. A., and Todd, H. P.: A Comparison of Eight Antibiotics, in Vivo and in Vitro, J. Bact. **58**: 61, 1949.
4. Hewitt, W. L., and Williams, B.: Chloromycetin (Chloramphenicol) in the Treatment of Infections, New England J. Med. **242**: 119, 1950. Recinos, A.; Ross, S.; Olshaker, B., and Twible, E.: Chloromycetin in the Treatment of Pneumonia in Infants and Children, New England J. Med. **241**: 733, 1949.
5. Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y., supplied the aureomycin used in this study, and Parke, Davis & Co., Detroit, supplied the chloramphenicol.
6. Dr. Edward F. Roberts of Wyeth, Inc., Philadelphia, supplied the pneumococcic typing serum.

typed, but which had appropriate morphological and cultural characteristics and were bile soluble, were considered to be pneumococci of higher types. Acute and convalescent serums were obtained from most of the patients in whom the diagnosis of pneumococcic pneumonia was not definitely established, and were tested for cold agglutinins, Streptococcus MG agglutinins, and complement-fixing antibodies for psittacosis and Q fever.[7] All pneumococci were tested for sensitivity to choramphenicol and aureomycin, using a tube dilution method. Aureomycin serum levels were estimated in a number of patients, using the method of Dornbush and Pelcak.[8] A similar method was found to be satisfactory for determining chloramphenicol serum levels.

The plan of treatment was to give aureomycin and chloramphenicol to alternate patients, administering 1

TABLE 1.—*Status of the Patients on Admission*

	Number of Patients	
	Aureomycin Group	Chloramphenicol Group
Total	50	50
Male	32	40
Female	18	10
Clinical condition		
Critically ill	9	7
Severely ill	29	28
Moderately ill	12	15
Preexisting disease		
Healed empyema	0	2
Bronchiectasis	5	9
Asthma	3	1
Tuberculosis, active	1	1
Cardiac decompensation	6	3
Chronic alcoholism	4	5
Carcinoma of lung	1	2
Thrombophlebitis	1	0
Multiple sclerosis	1	0
Multiple myeloma	0	1
Cerebrovascular accident	3	0
Total	25	24
Age in years		
10-20	3	1
20-30	4	2
30-40	5	5
40-50	11	10
50-60	3	9
60-70	8	7
70-80	9	14
80-90	7	2
Average age	52.4	58.1
Temperature F. (average)	102.6	101.6
White blood cell count (average)	16,000	15,400

gm. daily in a single dose. For most of the study this policy was adhered to, but a number of exceptions occurred. In spite of the failure to follow rigidly the proposed schedule, the two groups were quite similar in most respects, as indicated in Table 1. A close similarity was found in the temperature, white blood cell count, and severity of illness at the time of admission. Patients treated with chloramphenicol fell into a somewhat older age group. Preexisting disease was present in approximately half of the patients, and was well divided between the two groups. The pneumonia was of five days' duration, on the average, when therapy was instituted.

A diagnosis of pneumococcic pneumonia was made in 76 of the 100 patients, and blood cultures were positive for pneumococci in 15 (20%). Types of pneumococci isolated from the sputum or blood in these cases are listed in Table 2, and susceptibilities of most of them to aureomycin and chloramphenicol are listed in Table 3. Of the 24 patients from whom pneumococci were not isolated, two had pneumonia caused by Friedländer's bacillus, two by Escherichia coli, and one by Hemophilus influenzae. In the remaining 19 a diagnosis of bacterial pneumonia, etiology undetermined, was made. These 19 patients had clinical findings compatible with pneumococcic pneumonia, but were not given this definitive diag-

TABLE 2.—*Types of Pneumococci Isolated from Seventy-Six Patients with Pneumococcic Pneumonia*

	Sputum		Blood	
Type	Aureomycin Group	Chloramphenicol Group	Aureomycin Group	Chloramphenicol Group
1	4	4	2	..
2	2	4	..	1
3	4	1	1	..
4	1	3	1	1
5	..	2	..	2
6	2	1	..	..
7	1	3	..	2
8	4	..	1	..
12	2	1	2	..
18	..	3	..	1
19	3	1	..	..
20	1	..	1	..
22	1	2	..	..
33	1	2	..	..
10, 29, 34	3	3	..	..
13, 14	2	..	..	..
15, 23, 25	..	3	..	..
Nontypable	5	7	..	..
Total	36	40	8	7

nosis since pneumococci, or other predominating organisms, were not isolated from the sputum. None had an initial elevation or comparative rise in titer of cold agglutinins, or of the other antibodies tested.

RESULTS

The over-all results in the 100 patients treated are summarized in Table 4. For further analysis, the response to the two antibiotics will be considered separately.

TABLE 3.—*Susceptibility of Pneumococci to Aureomycin and Chloramphenicol*

γ per cc.	Aureomycin	Chloramphenicol
0.011	1	0
0.022	1	1
0.045	3	1
0.09	9	1
0.19	24	1
0.39	16	3
0.78	3	10
1.56	4	12
3.12	4	26
6.25	0	9
12.5	0	1
Total Number of Strains Tested	65	65

TABLE 4.—*Results of Therapy in One Hundred Patients Treated*

	Aureomycin			Chloramphenicol		
	Pneumococcic Pneumonias	Other Bacterial Pneumonias	Total	Pneumococcic Pneumonias	Other Bacterial Pneumonias	Total
Good response to therapy, without complications	28	9	37	31	9	40
Complications	6	2	8	8	0	8
Deaths	2	3	5	1	1	2
Total	36	14	50	40	10	50

Patients Treated with Aureomycin.—Good Response: Thirty-seven of the 50 patients treated with aureomycin had a good clinical response, with no complications

7. These tests were performed at the Virus Diagnostic Laboratory of the University of Washington School of Medicine, and the Washington State Department of Health.

8. Dornbush, A. C., and Pelcak, E. J.: The Determination of Aureomycin in Serum and Other Body Fluids, Ann. New York Acad. Sc. **51**: 218, 1948.

(Table 5). Twenty-eight of these successfully treated cases had pneumococcic pneumonia; 19 were considered seriously ill, and two had positive blood cultures. The other nine patients had bacterial pneumonias in which pneumococci were not isolated. Thirty-one of the 37

TABLE 5.—*Response to Therapy in Uncomplicated Cases*

	Pneumococcic Pneumonias		Other Bacterial Pneumonias		Total	
	Aureomycin	Chloramphenicol	Aureomycin	Chloramphenicol	Aureomycin	Chloramphenicol
Number of patients whose temperature reached normal in						
24 hr.	16	15	4	6	19	20
48 hr.	11	11	4	3	15	15
72 hr.	1	5	1	0	3	5
Total	28	31	9	9	37	40
Average to reach normal (in days)	1.5	1.3	2.0	1.6	1.6	1.3

patients received 1 gm. of aureomycin on admission, and 1 gm. once a day for an average of six days. Of the remaining six patients, two were given 2 gm. daily in divided doses. One of these patients was a 350-lb. woman who was severely ill; the other was a man with mitral stenosis and congestive failure, who was also seriously ill. Since it was not known that 1 gm. daily was the optimal dose, it was considered safer to administer larger amounts in these two cases. Four patients, who were disoriented, uncooperative, and had difficulty in ingesting oral medications, were given aureomycin intravenously as well as by mouth. Of the 37 patients in this group, only two had received any treatment prior to admission. Each had been given 300,000 units of penicillin procaine the day before entry, but both were still acutely ill, with high fever, and pneumococci were isolated from the sputum. The course of a typical patient in this group is shown in Figure 1.

Complications: In eight patients who were treated with aureomycin the hospital course was complicated.

TABLE 6.—*Complications and Deaths*

	Aureomycin Group	Chloramphenicol Group
Complications		
Sterile effusion	1	3
Relapse	0	1
Delayed resolution	3	2
Collapsed lobe	1	1
Meningitis	1	1
Empyema	1	0
Thrombophlebitis	1	0
Total	8	8
Deaths		
Pneumococcic pneumonia (type 3)	1	0
Pneumonia (Pneumococcus type 18 and Friedländer's bacillus)	0	1
Empyema	1	0
Multiple sclerosis, aspiration pneumonia	1	0
Cardiac failure	1	0
Cerebrovascular accident	1	0
Multiple myeloma	0	1
Total	5	2

As outlined in Table 6, one patient with pneumococcic pneumonia had a sterile effusion, while in another pneumococcic empyema (type 2) developed, which responded to intrapleural penicillin. One man had pneumococcic meningitis, as well as pneumonia. Following three days of intensive intravenous and oral aureomycin therapy, there was some improvement in the spinal fluid findings, but pneumococci were still present on culture. Since his condition remained critical, aureomycin was discontinued and intensive penicillin therapy was begun; the meningitis was cured, but some mental impairment remained. Three patients had delayed resolution of their pneumonias with a slow temperature response; the explanation in two of these cases was not clear, while in the third, cardiac decompensation may have played a role. In one patient a partial collapse of the middle lobe occurred during therapy, and the temperature remained elevated for 11 days. Bronchograms and bronchoscopy later demonstrated no satisfactory explanation for the collapse. In the final case the pneumonia responded satisfactorily but the temperature remained elevated for 10 days owing to a severe thrombophlebitis.

Deaths: Five deaths occurred among the 50 patients treated with aureomycin; four were examined post-

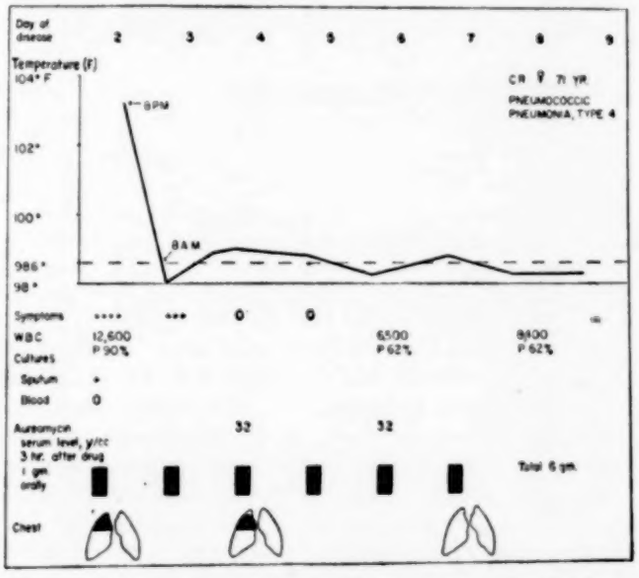

Fig. 1.—Clinical course of a representative patient treated with aureomycin.

mortem. One, a chronic alcoholic aged 47, entered the hospital unconscious, with signs of a cerebrovascular accident and bilateral lower lobe pneumonia with bacteremia (type 12). He was given intensive intravenous aureomycin therapy, but he died two days after admission. Autopsy revealed massive cerebral thrombosis which probably was the cause of death. A man aged 67 with involvement of the left upper and lower lobes with bacteremia (type 3) entered the hospital desperately ill and went into circulatory collapse, with a subnormal temperature, shortly thereafter. Despite intensive oral and intravenous administration of aureomycin, he died 38 hr. after admission. It seems probable that this patient died of an overwhelming infection in spite of therapy. Three fatalities occurred in the patients with bacterial pneumonias of undetermined etiology. One was a chronic alcoholic aged 63, who entered the hospital with a right lower lobe pneumonia. On aureomycin, 1 gm. daily, his temperature gradually decreased, but never reached normal levels. A loculated effusion devel-

oped in the right chest, and 220 cc. of slightly cloudy, sterile fluid was removed five days after admission. Dyspnea developed, and the heart, previously normal in size, was found to be markedly enlarged one week after entry. The congestive failure did not respond to the usual measures, and he died 16 days after admission. On autopsy there were minimal residual signs of pneumonia of the right lower lobe, with a thin layer of loculated, gelatinous pleural exudate. There was fatty infiltration of the liver, and hypertrophy and dilatation of the heart, of undetermined cause. This was a complicated case in which the pneumonia apparently responded to aureomycin, but in which heart failure appeared and was the cause of death. Another patient, a man aged 40 with multiple sclerosis who was unable to cough effectively, or raise sputum, was admitted with aspiration pneumonia. He was critically ill on admission, and a pure growth of Esch. coli was cultured from tracheal aspirations. In spite of the daily administration of 300 to 500 mg. of aureomycin intravenously, he rapidly grew worse and died after six days in the hospital. Post-mortem examination revealed an extensive bilateral bronchopneumonia. The role of aureomycin is difficult to evaluate in this patient as he had partial respiratory paralysis and aspiration of gastric contents. The fifth patient, a 74-year-old man with a right lower lobe pneumonia and Staphylococcus aureus and pneumococci in the sputum, had received penicillin in four days without improvement. His sputum then contained a pure culture of Esch. coli. With aureomycin, 1 gm. daily for six days, his temperature fell to normal, and on x-ray examination there was partial clearing of the infiltrations. Clinically, however, he became progressively weaker. X-ray density persisted in the right chest posteriorly, but no fluid was obtained when thoracentesis was attempted. He died six weeks after aureomycin was discontinued, and at autopsy was found to have an empyema on the right, with atelectasis and multiple abscesses of the right upper lobe. Unfortunately, cultures of the pus were not obtained.

Patients Treated with Chloramphenicol.—Good Response: Forty of the 50 patients treated with chloramphenicol had a good response to therapy (Table 5). Of these, 31 had pneumococcic pneumonia; 20 were considered severely ill, and positive blood cultures were obtained in four. Nine patients had nonpneumococcic bacterial pneumonias, two of these were caused by Friedländer's bacillus, one by Hemophilus influenzae, and in six the etiologic organism was not isolated. The antibiotic was administered in the same dosage as aureomycin, i. e., an initial dose of 1 gm. followed by 1 gm. daily for an average of six days. In this group only one patient had received therapy previously; he was given an unknown amount of oral penicillin the day before admission. The chart of a typical patient in this group is shown in Figure 2.

The three patients whose pneumonias were caused by gram-negative bacilli deserve special attention. Two of these had Friedländer's pneumonia. One responded to 1 gm. of chloramphenicol daily with rapid improvement over a period of three days, and was entirely well, with a clear x-ray, within two weeks. The other patient, who was much sicker and had a positive blood culture, received 4 to 6 gm. of chloramphenicol daily; the course of his disease was long and complicated by pulmonary abscess formation but eventually satisfactory. The third patient, despite the daily administration of 400,000 units of penicillin for three days, remained desperately ill. At that time he was found to have a shift from a mixed sputum flora to a nearly pure culture of Hemophilus influenzae, and a blood culture was positive for the same organism. He was transferred to the Infectious Disease Service, where chloramphenicol was given in amounts of 1 gm. daily. There was a prompt response with a temperature fall and improvement from the signs of pneumonia within three days.

Complications: In eight patients treated with chloramphenicol complications developed (Table 6). These were all in proven pneumococcic pneumonias. One had a good response to a five-day course of treatment, but relapsed four days later, and with retreatment made an uneventful recovery. Small sterile effusions developed in three cases, but were not associated with a febrile

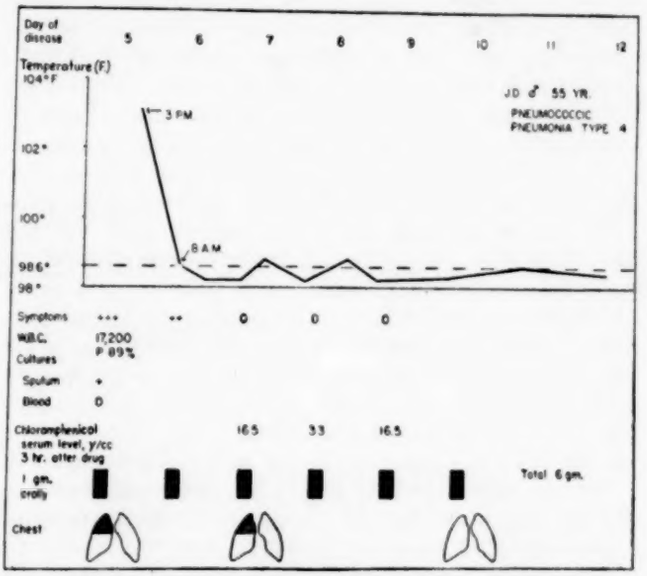

Fig. 2.—Clinical course of a representative patient treated with chloramphenicol.

reaction. Of the two patients with delayed resolution, one had bronchiectasis and the other had silicosis. Another patient developed a collapse of the right lower lobe during therapy. A 59-year-old man with a severe type-7 pneumonia and bacteremia received 1 gm. of chloramphenicol on admission and a similar amount 12 hr. later, but developed signs of pneumococcic meningitis 18 hr. after entry. With massive intramuscular penicillin therapy he made a prompt recovery.

Deaths: Two fatalities were encountered in this group. One, a man aged 76 chronically ill with multiple myeloma, entered the hospital with signs and symptoms of pneumonia of both lower lobes. He was given 1 gm. of chloramphenicol every 12 hr., with a fall in temperature to normal in four days, accompanied by a marked improvement in the clinical picture. However, despite a normal temperature and clearing on the x-ray, he became progressively weaker and died of the multiple myeloma on his 10th hospital day. The other fatality occurred in a man aged 74 with a type-18 pneumonia

and bacteremia, following a history of four to five months' anorexia and weight loss with pain in the mid-back. His condition was critical on admission. He was given chloramphenicol resulting in a marked fall in temperature in the first two days. He remained disoriented and incontinent, however, and when the temperature rose again two days later, he was given aureomycin intravenously. He failed rapidly and died four days later. Two cubic centimeters of pus were removed from his right lower chest the day before his death and Friedländer's bacilli were recovered on culture. This man was more debilitated than could be explained on the basis of pneumonia, and in view of the long history may well have had some underlying disease; however, an autopsy was not obtained, and pneumonia must be regarded as the cause of death.

COMMENTS

In the present study, favorable results have been obtained with both aureomycin and chloramphenicol in the treatment of bacterial pneumonias in adults. The prompt response noted with aureomycin is similar to that previously described in the treatment of pneumococcic pneumonias with this antibiotic by Gocke and others,[1] and Dowling and associates.[2] The results obtained with chloramphenicol are of special interest, since little information is available so far concerning its effectiveness in the treatment of bacterial pneumonias.

Toxic manifestations were not observed with chloramphenicol. With aureomycin, nausea, vomiting, and diarrhea which could be attributed to ingestion of the antibiotic occurred in only a few patients, and in no instance required a change to another antibiotic. This low incidence of toxicity is probably due to the small doses administered. Ten patients who were uncooperative or disoriented, or who were unable to take medications by mouth, were given aureomycin intravenously. The intravenous preparation, which was given in doses of 100 mg. every 8, 12, or 24 hr., was well tolerated and, when diluted in 100 cc. or more of 5% dextrose or isotonic saline solution, caused no local reactions. An intravenous preparation of chloramphenicol was not available at the time of this study.

From a comparative standpoint, superiority can be claimed for neither antibiotic on the basis of the present series. Although it was not possible to rigidly alternate the patients, the two groups treated were similar in most respects, and any clear-cut differences in therapeutic efficacy should have become evident. It is of interest that, as indicated in Table 2, pneumococci isolated from the patients treated were somewhat more susceptible in vitro to aureomycin than to chloramphenicol. The explanation for the fact that the clinical response to chloramphenicol was equally as good as that to aureomycin may lie in the differences observed in blood serum concentrations following the administration of equivalent doses of the two antibiotics. With aureomycin, serum levels four hours after the ingestion of 1 gm. fell in the general range of 2 to 6 γ per cubic centimeter while with chloramphenicol levels of 15 to 25 γ per cubic centimeter were commonly observed.

Optimal dosages of aureomycin and chloramphenicol have not yet been determined for most infections. One condition that might be expected to respond to doses smaller than those usually employed is pneumococcic pneumonia, since pneumococci are highly susceptible to both antibiotics in vitro. Accordingly, the majority of the patients in the present series received only 1 gm. daily, which was given in a single dose because of the prolonged blood levels obtained with these antibiotics after oral administration. Random blood samples, collected from 20 patients 24 hr. following the oral administration of 1 gm., were found to contain aureomycin in every instance, in concentrations ranging from 0.025 to 0.8 γ per cubic centimeter.

The results obtained on this regimen of 1 gm. daily would appear to justify the conclusion that this dosage is adequate for the treatment of many, but possibly not all, patients with pneumococcic and other bacterial pneumonias. Of the 81 patients treated with 1 gm. daily, 57 were considered severely ill and six were bacteremic. The response in this group was uniformly good. Of the 19 patients who received more than 1 gm. daily, 16 were considered severely ill, nine were bacteremic, seven were among the 16 patients who ran a complicated course, and four were among the seven patients who died. In general, the patients who were given more than 1 gm. daily were those who did not seem to respond to the smaller doses, and for the most part this lack of response was due to the presence of complications or preexisting diseases. It is not known, of course, whether these complications would have been prevented or modified if larger doses had been given from the outset. It was our impression, however, that they would not have been, and that the failures were not due to inadequate doses of the antibiotics. We feel that a daily dose of 1 gm. of either aureomycin or chloramphenicol is adequate for the majority of patients with bacterial pneumonias, but cannot be recommended as optimal for all cases at the present time. In pneumonias caused by gram-negative bacilli, and especially Friedländer's bacillus, 3 or 4 gm. daily is certainly indicated, at least until more information is available.

At the beginning of the study it was anticipated that an appreciable number of viral pneumonias would be encountered. However, there were only three patients in whom this diagnosis was established. It therefore seemed wise to discard these three cases from the study, along with 18 others who were treated, but who on review were not found to meet the criteria for a diagnosis of bacterial pneumonia.

Complications (Table 6) were similar in incidence and severity to those which have been observed in pneumonias treated with penicillin, and in previous studies with aureomycin. Sterile pleural effusions were noted in four patients, and there were two pneumococcic empyemas. Preparations of aureomycin and chloramphenicol suitable for intrapleural installation are not yet available and therefore empyemas, when they appear, must be treated with penicillin. The two patients with pneumococcic meningitis are of special interest. One, who had the full blown picture of meningitis on admission, showed some improvement in the spinal fluid findings on intensive aureomycin therapy, but cultures of the spinal fluid remained positive. After three days he was started on penicillin, and the spinal fluid was sterile 24 hr. later. In the other patient signs and symptoms

developed 18 hr. after chloramphenicol therapy was started. Definite conclusions cannot be drawn from two cases, but it is our opinion that in the treatment of pneumococcic meningitis aureomycin and chloramphenicol, which are primarily bacteriostatic in their action, are probably inferior to penicillin, which causes actual killing of pneumococci.

There were seven deaths in the series (7%), which is a relatively low mortality rate in view of the fact that 59 of the 100 patients were over 50 years of age. Of the seven deaths, only four can be definitely attributed to pneumonia or its complications (Table 6). In the other three patients, coexisting diseases played a major role in determining the fatal outcome. (These results are comparable to past experience with penicillin at this hospital. In 1949, 68 cases of bacterial pneumonia were studied. Thirty-six [53%] of these were in patients who were over 50 years of age. Blood cultures were positive in nine [13.5%] and there were six deaths [8.8% mortality].)[9]

SUMMARY AND CONCLUSIONS

From Jan. 1 to June 15, 1950, 50 patients with bacterial pneumonia were treated with aureomycin, and 50 with chloramphenicol. Of the 100 patients, 76 had proved pneumococcic pneumonia, and blood cultures were positive for pneumococci in 15 (20%). In five, the pneumonia was caused by gram-negative bacilli, and in the remaining 19 the etiologic agent could not be definitely determined.

The response to therapy was good in both groups, and superiority could not be claimed for either antibiotic.

Complications occurred in 16 patients in the entire series. There were seven deaths, only four of which could be attributed to pneumonia alone.

Pneumococci isolated from the patients treated were somewhat more susceptible in vitro to aureomycin than to chloramphenicol. On the other hand, blood serum concentrations four hours following the ingestion of 1 gm. of chloramphenicol were considerably higher than those obtained with aureomycin. It would appear that the greater susceptibility of pneumococci to aureomycin in vitro was offset by the higher blood levels attained with chloramphenicol, making the clinical effectiveness of the two antibiotics approximately equal, gram for gram.

Eighty-one of the 100 patients were treated with 1 gm. of aureomycin or chloramphenicol daily, given in a single dose, and the results with this regimen were in general excellent. This dosage is certainly adequate for the majority of patients with pneumococcic pneumonia, but our study does not permit the conclusion that it is definitely optimal for all cases. Larger doses are indicated in the treatment of pneumonias caused by gram-negative bacilli, especially in those caused by Friedländer's bacillus.

University of Washington School of Medicine, Seattle 5 (Dr. Kirby).

9. Haviland, J. W.; Massey, F. C., and Sparkman, D. R.: Unpublished data.

HYPOPROTEINOSIS OF CHILDHOOD

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For many years we have encountered a repetitious combination of complaints in office practice with children. The familiar list includes poor appetite; failure to gain weight and to grow normally; irritability; frequent gastrointestinal upsets, including vomiting and constipation; repeated bouts of infectious disease; dental caries, and pallor. Frequently when a child has been brought in with one or two of these conditions as presenting symptoms, history and examination have revealed others.

Gradually we came to realize that this combination of complaints is consistently associated with a certain type of dietary history. The child's diet is nearly always adequate in minerals and vitamins but is not adequate in protein. Ordinarily milk and carbohydrate foods are taken in large quantities, but meat, eggs, and other protein foods are neglected. Prompt and dramatic response to provision of adequate protein has established this syndrome, in our minds, as a true deficiency disease.

Surprisingly little has been written concerning the effects of protein deprivation on the infant and child except under conditions of rather severe deficiency.[1] It is timely, we feel, to call attention to this milder form of protein deficiency, which we are convinced is one of the most prevalent clinically manifested deficiency diseases which affect children. We have chosen to call this syndrome hypoproteinosis of childhood, in accordance with the terminology suggested by Miranda.[2]

This is a preliminary report based on purely clinical observations, as exemplified by the following brief case reports, which are typical of hundreds in our files.

REPORTS OF CASES

CASE 1.—*Presenting Complaint.*—G. B., a 20-mo.-old white boy, was brought in because of irritability, listlessness, excessive sleeping, failure to gain weight, and frequent infections of the upper respiratory tract.

History.—The boy had had these complaints for months. He had been treated with repeated courses of sulfonamides and had been given several courses of "liver" and thyroid, presumably "for anemia." The dietary history revealed that he refused to eat solid foods except for high-carbohydrate tidbits. He customarily drank at least a quart (950 cc.) of milk daily.

Salient Physical Findings.—The child was poorly nourished. His tissue turgor was poor. He was pale and irritable.

Laboratory Findings.—Blood studies revealed a hypochromic microcytic anemia. The hemoglobin content was 11 gm. per 100 cc. The red blood cell count was 3,500,000.

1. (*a*) Clements, F. W.: Some Aspects of Protein Metabolism in Infants and Children, M. J. Australia **2**:404-409 (Sept. 21) 1946. (*b*) Wolpe, L. Z.: Blood Protein Depletion in Infantile Eczema, California Med. **67**: 156-159 (Sept.) 1947. (*c*) Petrides, E. P.: Hunger Edema in Children, J. Pediat. **32**: 333-350 (April) 1948.

2. Miranda, F. de P.: Nutrition and Endocrinology with Special Reference to the Nutrition of the Mexican Indian, J. A. M. A. **136**: 542-545 (Feb. 21) 1948.

Treatment.—A high-protein diet, excluding milk, was prescribed. Small doses of ferrous sulfate were given.

Progress.—The child's general condition immediately improved. Infections of the upper respiratory tract were greatly reduced in number and severity. The appetite improved remarkably. The child gained weight; his irritability and listlessness disappeared, and his color became essentially normal.

CASE 2.—*Presenting Complaint.*—J. T. B., a 4-yr.-old white boy, was brought in because of easy fatigability, nervousness, refusal to eat, and refusal to swallow food after chewing it. He often held his food in his mouth for hours.

History.—This only child lived with his parents and grandparents. He was subjected to much coaxing and bribing at mealtime. Although he had always drunk quantities of milk and eaten crackers and cookies between meals, he refused to eat meat and other solid foods at the table.

Salient Physical Findings.—Obstreperous before the mother and grandmother left the examining room, this child became cooperative afterward. He was poorly nourished and had poor tissue turgor and mild pallor.

Treatment.—A high-protein diet, excluding milk, was suggested. The mother and grandmother were receptive to the idea that the child's problems were due to their attitudes. Instructions were given that the child was to feed himself and not be fed. He was not to be denied the privilege of getting hungry. It was pointed out that the normal child will swallow when hungry.

Progress.—One month later the child had made an excellent weight gain. His appetite was good. His general appearance improved. There was no protest at the examination, even with the mother and grandmother present. His ready fatigability had lessened. He looked forward to his meals. The cooperative attitude of parents and grandparents made management in this instance easy and results gratifying.

CASE 3.—*Presenting Complaint.*—E. T. and J. T., 6-yr.-old white twins, one male and one female, were brought in from another city for routine checkup.

History.—The boy as an infant had shown great reluctance in being weaned from strained foods. He drank quantities of milk and ate many sweets between meals. He ate little of solid foods. The girl had never liked milk but did eat quantities of meat, vegetables, cheese, and other solid foods.

Salient Physical Findings.—The boy was only fairly well nourished. He had considerable dental caries. The girl was well nourished, weighing 1½ lb. (0.75 kg.) more than her brother, and had excellent teeth.

Treatment.—A high-protein diet, without milk, was outlined for the boy. No change was suggested in the dietary management of the girl.

Progress.—In one month the boy's appetite was on a par with the girl's. He had made an excellent weight gain.

CASE 4.—*Presenting Complaint.*—D. H., a 16-mo.-old white girl, was brought in because she refused to eat anything but strained foods and vomited when coarser foods were fed.

History.—This child had always drunk milk through a nipple and was taking a quart or more daily at the time we saw her. When attempts were made to feed coarser foods, she refused them or gagged and vomited so that the mother was afraid to offer them. She ate crackers and cookies between her bottle feedings.

Salient Physical Findings.—The girl was fairly well nourished. There were no other pertinent findings.

Treatment.—The importance of other foods in addition to milk was stressed. The bottle was discarded, and milk was discontinued temporarily. Strained foods were excluded. The girl was to be permitted to get hungry enough to take and swallow chopped foods.

Progress.—One month later the child had made an excellent weight gain, and her appetite had improved dramatically. Her vomiting had subsided.

CASE 5.—*Presenting Complaint.*—D. I., 2½-yr.-old white boy, was brought in because of refusal to swallow anything but liquids. He had crying and breath-holding spells which resulted in unconsciousness. He slept excessively, appeared to have no energy, and was constipated.

History.—The child had shown the aforementioned symptoms for months. He had drunk milk from a feeding bottle through a nipple in the amount of a quart or more daily. He ate many graham crackers between feedings.

Salient Physical Findings.—The patient appeared fairly well nourished but was moderately pale. He was exceedingly irritable and cried considerably while being examined.

Treatment.—A high-protein diet was prescribed, with milk temporarily excluded. The importance of hunger was emphasized. Between-meal snacks were forbidden. The child's need for only one or two good meals daily was explained.

Progress.—In several follow-up visits excellent and progressive weight gains were observed. The appetite was greatly improved. The child was more alert and slept less. His breath-holding spells had been discontinued since the first visit.

CASE 6.—*Presenting Complaint.*—R. G., a 3½-yr.-old white boy, was brought in because of repeated bouts of otitis media.

History.—Tonsillectomy had been performed at the age of 2½ yr. because of frequent infections of the upper respiratory tract. The child had received repeated courses of antibiotics and sulfonamides. He had gained weight poorly, had a poor appetite, slept poorly, and was constipated. He drank large quantities of milk and frequently nibbled on cookies and crackers between the battles which were his meals. He refused to swallow food at the table.

Salient Physical Findings.—This only child was poorly developed and slender and appeared not to be well nourished. His tissue turgor was poor. He had a seropurulent discharge from the right aural canal.

Treatment.—The importance of protein in the diet was emphasized, as was the importance of permitting the child to become hungry. A high-protein diet was prescribed. All food except fruit was excluded between meals. It was emphasized that the child must feed himself and must be dismissed from the table when he showed lack of interest in food. He was not to be punished with food.

The otitis media was treated with aureomycin, with prompt recovery.

Progress.—In one month the child gained 2 lb. (0.9 kg.). His appetite improved remarkably, his sleeping habits were better, and his constipation had been relieved.

CASE 7.—*Presenting Complaint.*—J. S., a 19-mo.-old white girl, was brought in because of repeated episodes of high fever and breath-holding spells and poor teeth.

History.—The infant was constipated and had been given castor oil daily for many weeks. She perspired a great deal. She refused all foods except milk and starches, and had done so since early infancy. Her milk intake was from 1 to 2 qt. (950 to 1,900 cc.) daily. The only other foods she ate were cereals, bread, cookies, crackers, and potatoes.

Three siblings were much older, the next in age being 14 yr. her senior.

Salient Physical Findings.—This infant was large but flabby. All her primary dentition was badly decayed. The upper front incisors had been extracted. She had a breath-holding spell while being examined.

Treatment.—The parents, who were well-to-do farm people, were convinced that the child's plight was due to their oversolicitude. It was a revelation to them when it was pointed out that their own farm stock had been getting a much better diet than their infant. A high-protein diet was prescribed; milk was excluded.

Progress.—In several follow-up visits it was observed that the child had improved dramatically. Her tissue turgor became normal; her disposition improved. She had had no more breath-holding spells since the first visit to the office. Her constipation was relieved. In a period of 18 mo. she had had no infection.

CASE 8.—*Presenting Complaint.*—J. D., a 3-yr.-old white boy, was brought in because of frequent infections of the upper respiratory tract, poor appetite, and constipation.

History.—The child had always drunk considerable amounts of milk and had eaten carbohydrate foods and confections between meals. He had consistently refused meat and vegetables.

Salient Physical Findings.—This patient was poorly developed and nourished. His tissue turgor was poor; he had mild pallor, and his feet were moderately pronated.

Treatment.—A high-protein diet was prescribed; milk was excluded. The parents were instructed to stop forcing the child to eat and to allow him to get hungry. Confections and soft drinks were excluded from the diet. We were apprehensive about parental cooperation because the father was a soft drink dealer.

Progress.—In several follow-up visits the child made excellent progress. His pallor disappeared. He gained weight. His appetite became good; his sleeping improved, and his constipation was corrected.

CASE 9.—*Presenting Complaint.*—L. W., a 9½-yr.-old white boy, was brought in because of poor teeth, frequent spells of vomiting, poor appetite, and frequent stools.

History.—This only child drank large amounts of milk and soft drinks. He ate cookies and crackers between meals. He refused meat and vegetables.

Salient Physical Findings.—This child was poorly developed and nourished. He was moderately pale. Several teeth had been extracted, and there were numerous unfilled large cavities.

Treatment.—A high-protein diet was prescribed, and milk was excluded. Small doses of ferrous sulfate were given.

Progress.—A month later the child had made an excellent weight gain. No further infection of the upper respiratory tract had occurred. His appetite had definitely improved.

SYMPTOMATOLOGY

Anorexia.—A constant symptom is anorexia. Anorexia is perhaps the most frequent complaint with which the pediatrician is confronted. There is much confusion concerning this term. It often means one thing to the parent and something entirely different to the physician. Loss of appetite due to disease, such as infection, is usually of brief duration. The parents seldom have time to get seriously worried about it. Periodic reduction of appetite which occurs during the growth and development of the child may be disconcerting because it recurs and at times appears to last indefinitely. Parents often regard this physiological disinterest in food as complete loss of appetite. Failure to realize that the phenomenon is normal at certain ages leads to distressing family conflicts. These conflicts set off a chain of reactions which may produce a state of malnutrition and true anorexia. Thus, anorexia, while it is a result of hypoproteinosis, is also one of the principal causes.

Failure to Gain Weight.—Children with hypoproteinosis frequently fail to gain weight. Misconceptions concerning the rate of weight gain in childhood parallel those concerning anorexia. True failure to gain, which occurs in disease and malnutrition, is cause for concern. On the other hand, a normal slowing of the rate of gain is often mistaken by parents for a failure to gain, and, like the concurrent reduction in appetite, leads to anxiety and to forcing of foods. A forced diet is usually a poorly balanced diet and one low in protein. Hypoproteinosis develops, and poor tissue turgor and poor muscular development are inevitable accompaniments.

Vomiting.—Vomiting as it occurs in hypoproteinosis is reminiscent of the cyclic vomiting described in the literature of former years.[3] The dramatic relief obtained when the protein intake is rendered adequate demonstrates that organic factors are important in the causation of the vomiting. In addition, psychogenic factors induced by parental oversolicitude play a part in the development of this ability to vomit. Children with the syndrome learn to reject food on the slightest provocation, and there is daily provocation.

Constipation.—Constipation is frequently observed. It is probably caused both by improper intestinal contents resulting from the unbalanced diet and by the poor muscle tone of the protein-deficient child.[1a, b]

Increased Susceptibility to Infections.—Frequent infections are observed in this group of children. Contagious disease is apt to be unduly severe. Persistent boils and styes occur. Infections of the upper respiratory tract are frequent. The importance of protein in defense against infection has been shown repeatedly.[4] Evidence exists that diets inadequate in protein are significant in the rheumatic state and in tuberculosis.[5]

Dental Caries.—Protein is essential for normal formation of bone, and the influence of protein on the utilization of calcium has been shown to be of paramount importance.[6]

Dental caries has been consistently found in our patients with hypoproteinosis. Surveys among Eskimos and Indians have indicated a lower incidence of caries among those consuming a high protein, high fat diet [7] than in those subsisting on high-carbohydrate diets.

Many of our patients with hypoproteinosis have had rampant dental caries with one or more abscessed teeth, and the nutritional status has not been improved until the abscessed teeth were removed. This is in keeping with the observation that infection interferes with nitrogen balance.[8]

Anemia.—Poor color is frequently the presenting complaint in these patients with hypoproteinosis. The anemia of hypoproteinosis appears to be a hypochromic anemia. Massive doses of iron in the absence of adequate protein intake do not cure it. When sufficient protein is provided, however, and small doses of iron are given, the response is immediate. This repeated observation has convinced us that the anemia is as much due to lack of protein as to lack of iron and that protein is essential to its cure. The necessity of adequate amounts of both iron

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and protein for normal hemoglobin formation is well-known.[9]

Laboratory Data.—As we stated earlier in the paper, this preliminary report is based on clinical observations. Laboratory work in our office practice has been limited to routine urinalysis, with other tests performed only when specifically indicated. The only significant laboratory evidence which we have to offer at the present time relates to the rather frequent observation of a hypochromic anemia.

Studies are now under way which are designed to determine the blood picture in all patients with hypoproteinosis. These studies will endeavor, among other things, to determine the actual blood protein level in patients with mild hypoproteinosis and the value of the hemoglobin level as a criterion of hypoproteinosis.

DIAGNOSIS

The diagnosis of hypoproteinosis in childhood is based on the dietary history and the signs and symptoms just discussed. There is no satisfactory simple laboratory test for moderate protein deficiency. It is usually not feasible to do special blood studies in private practice on ambulatory patients who do not appear to be in serious trouble.

A dietary history, taken carefully and properly evaluated, is essential for diagnosis. Typically, there is a history that the child is a good milk drinker but that "he does not eat" at mealtime. It is usually admitted somewhat reluctantly that the child does eat as he pleases between meals, usually such foods as "cookies, crackers, soft drinks, and candy," all highly refined carbohydrate foods.

The pitfalls in taking a dietary history are legion. Reactions to questions are likely to be influenced by what is assumed to be the right answer. Moreover, parents frequently do not have accurate knowledge of the amounts of various foodstuffs actually eaten by the child. The question "Does Junior eat meat?" may be answered by an emphatic "Yes" from the mother. Further probing is likely to reveal that he eats a bite or two of meat but a plateful of potatoes and bread. A detailed story of the child's food intake shows a predominance of starchy foods, milk, and sweets and an almost total absence of solid protein foods, such as meat and cheese. Analysis of this diet reveals an inadequate protein content.[10]

History taking further reveals that parents often think children eat the same foods because they eat at the same table. It is not unusual to find that one sibling may be in an excellent state of nutrition while another suffers from hypoproteinosis (Case 3). One may prefer meat, cheese, and fruits; the other, starches and milk. Calculation of the siblings actual intake of protein, fat, and carbohydrate reveals startling dissimilarities.

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ETIOLOGY

What is the cause of childhood hypoproteinosis? The condition is certainly understandable in the poverty-stricken. The cost of protein foods is relatively high, while starches and sweets are inexpensive. But why should children in families in which no expense is spared frequently consume a diet woefully deficient in protein? The basic reason is a general lack of understanding by parents of the fundamentals of nutrition.

Painstaking efforts have been directed toward teaching the laity some facts about food requirements. Sources of lay information are, however, limitless and often unreliable, and many of the popular theories have little in common with facts.

There is a tendency to overemphasize certain articles of diet, particularly milk because of its calcium content. Calcium, one of many essential nutrients, has so fired the public imagination that it is often the primary parental concern in the nutritional management of the growing child. Vitamins also have been made to loom importantly in the lay mind. Children of today are exposed to an array of highly advertised, palatable concoctions that did not exist a generation ago. Grandparents and other fond relatives shower children with tasty tidbits. Few parents, however, have heard of the term "protein" in connection with the nutrition of their children.

Superficially it might seem that if the child drinks milk in liberal quantities his protein intake should be adequate. Milk, however, provides only 1 gm. of protein to the ounce (30 gm.). The recommended daily allowance of protein for young children is 40 to 50 gm.[11] Even a quart of milk a day will not provide sufficient protein for adequate growth and development, and the consumption of this much milk at certain ages is likely to spoil the child's appetite for the solid foods, such as meat, eggs, and cheese, that make a much greater protein contribution in proportion to their bulk.

Little has been done, moreover, in educating parents on the changing nutritional requirements during different phases of growth and development. It is seldom pointed out that growth and appetite, rather than energy and appetite, are interdependent. Since growth does not occur in steady increments but accelerates and decelerates at various age levels throughout childhood, appetite of necessity must vacillate at different ages. And energy expended has little to do with the quantity of food the child will consume.

Psychological factors loom large in the etiology of cases of hypoproteinosis seen in private practice. Mother is determined to see that her child gets the proper foods (particularly milk) in quantities which she has been led to believe his energy and increasing age necessitate. This often is in conflict with the child's fluctuating growth needs. This conflict is especially likely to originate in the second year of life. The rate of weight gain decreases when children approach the end of the first year. The 2 yr. old's rate of gain is about one-sixth that of the 4-mo.-old infant. A period of minimum weight gain is reached when the child is about 2 to 2½ yr. of age. At this age he does not need or want much food. His interests are elsewhere. His personality and his aggressiveness are developing. On the other hand, the mother's instinctive

interest in feeding her child has not waned. She does not understand why this runabout does not share her enthusiasm for the feeding process. She becomes frantic lest her child will not gain as much as the neighbor's or will not eat every article of food that she thinks necessary. As the mother's anxiety and determination increase, the assertive child's persistence in refusal likewise increases. It then becomes a matter of "getting something into him." This something is usually the wrong kind of food and is almost invariably lacking in protein. The sweet, starchy foods taste better. Subsequently, hypoproteinosis becomes manifest.

MANAGEMENT

The treatment of hypoproteinosis is sometimes not simply that of prescribing a diet adequate in protein. When hypoproteinosis is due to improper parental attitudes and feeding technics, education is required. It is difficult to dislodge preconceived notions concerning nutrition. One effective way to attack these mistaken ideas is to compare the nutritional care of children with that accorded animals. It is pointed out that animals could not survive a diet of the highly refined carbohydrate food permitted children. Parents are appalled to learn that their dogs and cats and farm animals are given better diets than their children.

Moderately High Protein Diet

Breakfast	Noon
Fruit juice	Fruit
Egg, bacon, or ham	Cottage cheese, egg, or meat
Cereal, or toast and butter	Bread or crackers and butter
4-6 oz. (120-180 gm.) of milk *	4-6 oz. of milk *

Evening

Vegetables
Meat, fish, or chicken
Bread and butter
Fruit or gelatin dessert
4-6 oz. of milk *

* Omitted if child has previously consumed large quantities of milk to the exclusion of other foods.

An attempt is made to add the term "protein" to the lay repertory, along with "calcium" and "vitamins." The parents are given a list of the important foods rich in protein. Minerals and vitamins are properly placed in the scheme of things. We then try to convince parents that it is not how much the child eats but what he eats that is essential to his nutritional well-being. The accompanying table presents an outline of a moderately high protein diet.

With the child who has been consuming large quantities of milk to the exclusion of other foods, the transition to a diet adequate in protein is facilitated if milk is excluded. Attempts to taper off the milk intake invite failure of the whole program. It is necessary to reassure parents that no calamity will befall the child if he does not receive milk for a time. Amazingly, after these children have been on a milk-free diet for a short period they seldom have the same craving for it when it is introduced again.

A special effort is made to explain that while the diet lists three full meals the child should not be expected to eat all of them. We emphasize that consuming two good meals a day should be the probable limit of our expectation for the preschool child. The child's attitude and desires at breakfast usually determine what to expect at subsequent meals. Many children have a marked distaste for breakfast, as do many adults. In this event the noon meal is usually the large one. On the other hand, with some children breakfast is the largest meal of the day. In this case lunch will probably be a light meal, and the evening meal will be well taken. Parents must be admonished not to make the mistake of trying to stuff a runabout child with three large "harvest hand" meals daily.

Another point to be emphasized is the great importance of hunger. Its gratification is a pleasant sensation. Yet most children are never permitted the privilege of getting hungry. The mother dreams of her child being hungry enough to sit down and enjoy a good meal, but she will not permit him to become this hungry. She is dismayed when it is pointed out that her child is actually underprivileged in that he has been denied gratification of the sensation of hunger.

Parents must be impressed with the value of a pleasant atmosphere at mealtime. Nagging and forcing of food make these family gatherings a thing to be dreaded, and even accompanied by tears, so that no one eats well. Since emotions exert a powerful influence on appetite, it is no wonder that the child will eat only between meals —when he is free of nagging and cajolery. The child should be taught that the eating of meals is a privilege, not a duty. No attempts should be made to force or even to urge him to eat. He should not be allowed to think, however, that he has come to the table to be entertained. If he is disinclined to eat, he should be promptly dismissed from the table. Cooperation of all members of the family and consistency of attitude and practice are essential.

It is impossible for parents to make the complete reversal of their attitudes outlined here unless they understand why it needs to be done. The physician must be willing to spend time and to give proper attention to detail if hypoproteinosis in children is to be effectively combated. When full parental cooperation and acceptance of the program are obtained, results are dramatic.

SUMMARY AND CONCLUSIONS

A group of symptoms ordinarily taken as individual and unrelated complaints have been recognized as belonging to a common syndrome, designated as hypoproteinosis. These symptoms include anorexia; failure to gain weight; gastrointestinal disturbances, including vomiting and constipation; frequent bouts of infectious disease; dental caries, and anemia. The dietary history usually reveals liberal consumption of milk and carbohydrate foods, as well as adequate intake of minerals and vitamins, but insufficiency of solid protein foods, such as meat, eggs, and cheese. Difficulties in taking the dietary history are manifold. Yet a proper dietary history is essential for diagnosis. Effective management not only requires a diet ample in protein but has educational and psychological facets as well. Recognition of this problem and of its solution will spectacularly improve the health and well-being of children and will be a source of gratification to parents and physicians alike.

216 S. E. Riverside Dr. (Dr. Lynch).

CYTOLOGICAL STUDY OF THE UPPER GASTROINTESTINAL SEDIMENT

ITS VALUE, AS CORRELATED WITH ROENTGENOLOGIC AND CLINICAL FINDINGS, IN THE DIAGNOSIS OF CANCER

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Since August, 1948, cytological examination of sediment obtained from the upper gastrointestinal tracts of more than 100 patients has been performed at Graduate Hospital of the University of Pennsylvania. The data obtained by this procedure in the diagnosis of cancer have been compared with the roentgen interpretations, and each datum, in turn, has been correlated with the clinical, surgical, or autopsy findings. Almost all the patients examined were clinically suspected of having organic disease of the upper gastrointestinal tract and were referred for study by the surgeons or gastroenterologists of Graduate Hospital. These patients were studied by cytological and roentgenologic examinations.

PROCEDURE

As a preparation for the aspiration of gastric sediment, the patients were requested to fast for eight hours. A 16 F. Rehfuss tube, containing additional perforations in its distal 6 cm. to facilitate more complete aspiration, was passed, with fluoroscopic guidance.

When gastric sediment was to be examined, the patient was placed in the supine position with the tip of the tube well into the antral portion of the stomach. The fasting residuum was aspirated and retained. The stomach was lavaged five or six times with approximately 50 cc. of isotonic sodium chloride solution each time. The patient was rotated so that the mucosa of the entire stomach was "washed down" thoroughly. The fasting and lavage specimens were then centrifuged at high speed, without delay, for 20 minutes. Following centrifugation, the supernatant fluid was drawn off and smears were made of the sediment on albumin-coated slides; these were fixed before drying in equal parts of 95% ethyl alcohol and ether. Ordinarily, 300 cc. of lavage will yield enough sediment to make 12 to 15 slides for cytological examination. After fixation, the slides were stained by the technique employed by Papanicolaou.[1a]

In suspected esophageal lesions, the tube was passed with the patient erect. The tip of the Rehfuss tube was positioned immediately distal to the lesion. The patient was asked to swallow a mouthful of isotonic sodium chloride solution, and five seconds thereafter aspiration was initiated by applying suction by means of a large syringe. This process was repeated until approximately 300 cc. of fluid was collected. The lavage specimens were then treated in the same manner as the gastric specimens.

When, as a result of gastric retention, there is more than the usual amount of fasting residuum, the cytological examination is frequently unsatisfactory because the desquamated epithelial cells become lost in the débris and autolysis of the tissue cells results from the action of the gastric juice. It cannot be overemphasized that cytological study of the residual contents of a retentive stomach is most difficult.

Almost all the roentgenograms were reported by residents in training. No attempt was made to review the films for diagnostic purposes for this report. The statistics were gathered from the original interpretation.

All patients were grouped into five categories anatomically, depending on the roentgen location of the lesion: the esophagus, cardia of the stomach, body of the stomach, antrum or pylorus.

ESOPHAGUS

A very high degree of accuracy was achieved by both the cytological and roentgenologic methods in the diagnosis of esophageal lesions. A total of 13 patients was examined; eight of these had cancerous lesions, and the remainder had benign lesions.

All except one of the cancerous lesions were correctly diagnosed cytologically. In that one case the clinician requested an examination of the gastric sediment. The tip of the Rehfuss tube was passed to the antrum of the stomach and the gastric mucosa was lavaged with isotonic sodium chloride solution. This emphasizes the importance of obtaining material (desquamated epithelium) from the proximity of the lesion. All the cancerous cases were correctly diagnosed by the roentgen method. The five benign esophageal lesions were correctly diagnosed by both methods (table 1).

CARDIA

Of the 12 lesions found in the cardia of the stomach, two were malignant and 10 were benign.

In the cancerous group, the cytologist incorrectly diagnosed one lesion as benign. The roentgenologist correctly diagnosed one as cancerous; the second was diagnosed as equivocal.

In the benign group, the cytological method yielded only one error among the 10 patients studied. The

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roentgen method incorrectly diagnosed two of the 10 as cancerous and four as equivocal (table 2).

The roentgenologic evaluation of benignancy or malignancy of lesions of the cardia is difficult; the results obtained here vary little from the percentage of error generally experienced. Many of the roentgenologically demonstrated defects of the cardia were considered

TABLE 1.—*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Esophagus*

Proved Cases of Cancer	Number of Cases	Roentgen Diagnosis: Benign	Roentgen Diagnosis: Malignant	Roentgen Diagnosis: Equivocal	Cytological Diagnosis: Benign	Cytological Diagnosis: Malignant
Infiltrating lesions	7	..	7	..	1*	6
Polypoid lesion	1	..	1	..	..	1
Total	8	..	8	..	1	7
Proved Benign Cases						
Infiltrating lesions	3	3	..	..	3	..
Normal	2	2	..	..	2	..
Total	5	5	..	..	5	..

* Desquamated epithelium was obtained from the stomach instead of from the esophagus.

equivocal or cancerous; this is understandable, since benign pathologic processes do not commonly occur at this site. Most of these patients underwent exploratory operations and in some the surgeon was unable to explain the roentgen configuration. The rather high degree of accuracy obtained by the cytological method seems to indicate that cytological studies should be done routinely when abnormalities are discovered by roentgen examination.

BODY

There were 35 patients with lesions located in the body of the stomach; 17 of the lesions were malignant, 18 were benign.

Of the cancerous lesions examined cytologically, 15 were correctly diagnosed as malignant and two incorrectly, as benign. In each of the incorrectly diagnosed cases, the lesion was an infiltrating intramural carcinoma; since the mucosa was not involved, the desquamated cells that were examined presented a normal appearance. Errors such as these are inherent in the technique and cannot be eliminated. Only one of the 17 cancers

TABLE 2.—*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Cardia of the Stomach*

Proved Cases of Cancer	Number of Cases	Roentgen Diagnosis: Benign	Roentgen Diagnosis: Malignant	Roentgen Diagnosis: Equivocal	Cytological Diagnosis: Benign	Cytological Diagnosis: Malignant
Polypoid lesions	2	..	1	1	1	1
Total	2	..	1	1	1	1
Proved Benign Cases						
Polypoid lesions	6	2	1	3	5	1
Ulcerating lesions	3	1	1	1	3	..
Normal	1	1	..	..	1	..
Total	10	4	2	4	9	1

was diagnosed incorrectly by the roentgen method. This, too, was an infiltrating intramural carcinoma.

Only one of the 18 benign lesions was incorrectly diagnosed (false positive) by the cytological method. The roentgenologist, however, diagnosed five incorrectly as cancerous and two as equivocal in this same group (table 3).

ANTRUM

Of the 13 lesions in the antrum of the stomach, four were malignant and nine benign. All four of the cancers were correctly diagnosed by the cytological study. Three lesions were correctly diagnosed by the roentgen study; the fourth was interpreted as equivocal. In the group of nine benign lesions, there were two false positives demonstrated by the cytological method. The roentgenologist diagnosed one of these nine benign lesions as malignant and two as equivocal (table 4).

PYLORUS

There were 12 lesions located in the pyloric canal, all of which were benign. Only one false positive reaction was obtained by the cytological method. Roentgenologically, eight were correctly diagnosed as benign, but four were incorrectly interpreted, two, as malignant and two, as equivocal (table 5).

TABLE 3.—*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Body of the Stomach*

Proved Cases of Cancer	Number of Cases	Roentgen Diagnosis: Benign	Roentgen Diagnosis: Malignant	Roentgen Diagnosis: Equivocal	Cytological Diagnosis: Benign	Cytological Diagnosis: Malignant
Polypoid lesions	4	..	4	..	..	4
Infiltrating lesions	7	1	6	..	2	5
Ulcerating lesions	6	..	6	..	..	6
Total	17	1	16	..	2	15
Proved Benign Cases						
Polypoid lesions	5	1	2	2	5	..
Ulcerating lesions	13	10	3	..	12	1 (*)
Total	18	11	5	2	17	1

* This diagnosis was incorrect.

TABLE 4.—*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Antrum of the Stomach*

Proved Cases of Cancer	Number of Cases	Roentgen Diagnosis: Benign	Roentgen Diagnosis: Malignant	Roentgen Diagnosis: Equivocal	Cytological Diagnosis: Benign	Cytological Diagnosis: Malignant
Infiltrating lesions	2	..	2	..	..	2
Polypoid lesion	1	..	1	..	..	1
Ulcerating lesion	1	..	..	1	..	1
Total	4	..	3	1	..	4
Proved Benign Cases						
Infiltrating lesions	3	2	..	1	3	..
Polypoid lesion	1	1	..	..	1	..
Ulcerating lesions	4	2	1	1	2	2
Normal	1	1	..	..	1	..
Total	9	6	1	2	7	2

The data on all nonmalignant or benign cases are listed in table 6.

The data on all cancerous cases are listed in table 7.

COMMENT

Recent papers dealing with the application of the cytological method to the diagnosis of cancer of the stomach report accuracies ranging from 35 to 74%.[1]

We agree with Swarts and his associates,[10] who state that unsatisfactory specimens are largely responsible for the poor results. For that reason we took particular care, as described above, to obtain satisfactory specimens. Two of us (J. E. I. and M. S. L.) personally lavaged the stomach, obtained the specimens, centrifuged them, and prepared the slides. All the slides were examined by one

of us (J. E. I.). It is only when painstaking care is given to these details that accurate results can be obtained.

The roentgenologic and cytological methods are equally accurate in the diagnosis of cancerous lesions regardless of their location in the esophagus or stomach. The location and gross pathologic character of a lesion are

TABLE 5.—*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Pyloric Canal*

		Roentgen Diagnosis			Cytological Diagnosis	
Proved Benign Cases	Number of Cases	Benign	Malig-nant	Equiv-ocal	Benign	Malig-nant
Polypoid lesions	2	1	1	..	2	..
Infiltrating lesions	8	5	1	2	7	1
Ulcerating lesions	2	2	..	..	2	..
Total	12	8	2	2	11	1

features discernible by roentgenologic and endoscopic examinations. A cytological diagnosis of cancer is an important one; its accuracy is affected only by the care with which the specimens are obtained and by the experience of the cytologist.

Although the cytological study gave a higher number of correct diagnoses in the benign lesions, we believe that too much reliance should not be placed on a negative or noncancerous report. False negative findings may result (1) if sediment is improperly obtained from a retentive stomach, (2) if the lesion does not involve the mucosa, and (3) if an ulcerating cancer has become secondarily infected.

In our opinion, the cytological examination of sediment is an important and valuable adjunct to roentgenography and endoscopy in the diagnosis of cancerous lesions of the esophagus and stomach. Two intraepithelial carcinomas, one esophageal [2] and the other gastric, were correctly diagnosed cytologically, thus giving promise for the diagnosis of cancer before it is advanced. If enough properly trained cytologists were available, it might be feasible to use this method for mass surveys.

TABLE 6.—*Correlation of Diagnoses of 71 Proved Noncancerous Cases*

Roentgen Diagnosis			Cytological Diagnosis	
Benign *	Cancerous	Equivocal	Benign *	Cancerous
51	10	10	66	5

* This classification includes 17 control subjects.

TABLE 7.—*Correlation of Diagnoses of 31 Proved Cases of Cancer*

Roentgen Diagnosis			Cytological Diagnosis	
Benign	Cancerous	Equivocal	Benign	Cancerous
1	28	2	4*	27

* One patient had cytological studies of the stomach but cancer was in the esophagus.

SUMMARY

Cytological and roentgenologic examinations were performed on more than 100 patients with gastrointestinal complaints. These findings were compared with the clinical, surgical or autopsy findings.

In 31 cases in which cancer was ultimately proved, the cytological results were accurate in 27. The roentgen diagnosis was of about the same degree of accuracy, being correct in all but three cases.

In 71 cases in which no cancer was found, the cytological results were correct in 66; the roentgenologic results were correct in only 51 cases.

The value of a noncancerous or negative cytological diagnosis has not yet been determined.

The care used in obtaining the specimens and the experience of the cytologist undoubtedly account for the high degree of accuracy.

Despite the known difficulties associated with the procedure, cytological examination should be employed in all cases of suspected cancer, as a procedure complementary to roentgenography and endoscopy.

Hahnemann Medical College and Hospital, 230 N. Broad St. (Dr. Imbriglia).

2. Imbriglia, J. E., and Lopusniak, M. S.: Cytologic Examination of Sediment from the Esophagus in a Case of Intra-Epidermal Carcinoma of the Esophagus, Gastroenterology **13**: 457, 1949.

CLINICAL NOTES

LEPTOSPIRAL INFECTION IN MAN TREATED WITH TERRAMYCIN

REPORT OF A CASE

Daniel Liebowitz, M.D.
and
Harold Schwartz, M.D., Cleveland

Several reports of Leptospira icterohaemorrhagiae infection in man treated with penicillin and aureomycin have appeared in the recent literature.[1] One report dealing with the use of pencillin stated that rapid clinical improvement was observed within a 36 hour period in 16 patients.[1b] However, the general experience has been that if penicillin does affect the disease, it does not do so dramatically.[2] Two recent papers suggest that aureo-

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Reviewed by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. (*a*) Leibowitz, S.; Kissin, M., and Rinzler, S. H.: Weil's Disease; Report of 5 Cases, Am. J. Med. **8**: 314, 1950. (*b*) Bulmer, E.: Weil's Disease in Normandy; Its Treatment with Penicillin, Brit. M. J. **1**: 113, 1945. (*c*) Patterson, H. M.: Weil's Disease: Observations in 61 Cases with Special Reference to the Use of Penicillin in 6 Cases, J. A. M. A. **134**: 1077 (July 26) 1947. (*d*) Heilman, F. R., and Herrell, W. E.: Penicillin in Treatment of Experimental Leptospirosis Icterohaemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **19**: 89, 1944. (*e*) Heilman, F. R.: Aureomycin in the Treatment of Experimental Relapsing Fever and Leptospirosis Icterohaemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **23**: 569, 1948. (*f*) Cross, R. M.: Penicillin in Weil's Disease, Lancet **1**: 211, 1945. (*g*) Reid, E. A. S., and Reed, R. W.: Leptospirosis Icterohaemorrhagica or Weil's Disease, Canad. M. A. J. **63**: 479, 1950. (*h*) Brainerd, H.; Lennette, E. H.; Merklejohn, G.; Bruyn, H. B., Jr., and Clark, W. H., Jr.: The Clinical Evaluation of Aureomycin, J. Clin. Investigation **29**: 922, 1949. (*i*) Lurie, I.: Leptospirosis Ictero-hemorrhagica (Weil's Disease) Treated with Aureomycin: Report of a Case, Acta Med. orient. **8**: 188, 1949.

2. Beeson, P. B., in Conn, H. F.: Current Therapy: Latest Approved Methods of Treatment for the Practicing Physician, Philadelphia, W. B. Saunders Company, 1950, pp. 49-50.

mycin is an effective therapeutic agent in this disease.[8] The purpose of this report is to describe a case of Leptospira infection and its dramatic response to terramycin.

REPORT OF A CASE

C. D., a white man, 56, was admitted to the Veterans Administration Hospital, Cleveland on Aug. 7, 1950, complaining of weakness, poor appetite, and diarrhea of five days' duration. The patient noticed that his skin had become yellow, his urine dark, and his stools light in color during this period. Past history revealed that he had been employed as a railroad clerk for many years and that he was treated for "heart trouble" in 1947. He said he had drunk four to five bottles of beer daily most of his life. There was no evidence of an inadequate dietary intake.

Physical examination on admission revealed a deeply icteric, semistuporous white man who appeared acutely ill. Oral temperature was normal; respirations were 16 per minute and were deep and regular. There was a regular sinus tachycardia of 100 per minute. The blood pressure was normal. There were scattered areas of purpura over the high shoulder, thorax and abdomen. There was a hemorrhagic herpetic lesion on the lower lip, and a necrotic ulceration of the soft palate and uvula was present. The lungs were clear to auscultation and percussion except for an occasional high pitched wheeze at the bases. The heart was slightly enlarged to percussion, and the sounds were of poor quality. The liver was enlarged to the level of the umbilicus and was tender to palpation. There was generalized shotty lymphadenopathy. Neurological examination revealed residuals of an old right peripheral facial paralysis. The remainder of the physical examination was normal.

Laboratory Data.—Examination of the blood showed a mild anemia. The peripheral white cell count was 16,000 with 92% neutrophiles. Stool examinations were positive for occult blood for the first five days of hospitalization. Urinalysis revealed 2 + albuminuria on two occasions with many granular casts in the sediment. Bile was present in the urine repeatedly, while urobilinogen, at first absent, later appeared in normal amounts. The blood urea nitrogen was 80 mg., and nonprotein nitrogen was 109 mg. per 100 cc. on admission. Liver function tests were grossly abnormal. Sulfobromophthalein (bromsulphalein®) sodium retention in one hour was 46%. The icterus index was 459 units. Serum bilirubin was 37 mg. per 100 cc. The Van den Bergh reaction at the end of one minute was 30 mg. per 100 cc. Total proteins were within normal limits, but there was a relative decrease in the albumin fraction with an albumin-globulin ratio of 1:1. The cephalin flocculation test was 4 + at the end of 24 hours. The remainder of the liver chemistries, including thymol turbidity, total and free cholesterol, prothromin time, and alkaline phosphatase, were within normal limits. Bleeding, clotting, and clot retraction times were within normal limits. A red cell fragility test was normal. Spinal fluid examinations showed no abnormalities. The chest roentgenogram on admission showed finely nodular and linear densities throughout both lung fields. The cardiac silhouette was within normal limits.

Hospital Course.—The patient became progressively worse. He remained in a semistuporous condition for the first five hospital days, receiving several blood transfusions and parenteral feedings during this time. Daily injections of 600,000 units of aqueous procaine penicillin were administered for the first five hospital days. On the third hospital day a tentative diagnosis of leptospirosis was made, and blood was drawn for agglutinations. The first agglutinations were reported positive on the fifth hospital day in dilutions of 1:1,000 for Lept. icterohemorrhagiae and 1:650 for Lept. canicola. These titres were obtained with the use of dead organisms as antigen, and titres of 1:300 or over are considered diagnostic with the method used.[4] On the fourth hospital day a routine electrocardiogram showed that the patient was having alternating periods of auricular flutter and fibrillation. Digitalization promptly reverted the rhythm to normal. On the same day a maculo-papular rash appeared on the thorax, abdomen, upper arms, and thighs, and he appeared moribund. Since he had shown no response to penicillin, we decided to treat the patient with terramycin. Penicillin, therefore, was discontinued, and 0.5 Gm. of terramycin hydrochloride was administered every four hours by mouth. Within 24 hours the stools had become negative for occult blood, and clinical improvement was noticeable. After three days of treatment, the patient's sensorium had cleared. He was alert, began to sit up in bed, and was taking food by mouth. The maculo-papular rash had begun to fade, and the herpetic lesion on his lip was drying up. The necrotic lesions of the soft palate and uvula were healing, and the areas of purpura had disappeared. Five days after treatment with terramycin was begun, the serum bilirubin had dropped from 37.1 mg. to 12.1 mg. per 100 cc., and the other liver chemistries had shown a concomitant trend toward normal. The blood urea nitrogen gradually fell reaching a normal level of 20 mg. per 100 cc. by the 18th day of treatment. A chest roentgenogram taken on the 16th hospital day, 11 days after initiation of therapy with terramycin, was reported as normal. Convalescence was gradual, and on the 25th hospital day the patient was apparently well.

Agglutinations on the 24th hospital day were again positive in dilutions of 1:1,000 for Lept. icterohaemorrhagiae and 1:650 for Lept. canicola. On the 37th and 44th hospital days, agglutinations with use of the dead organisms were reported as negative. Blood drawn on the 40th hospital day was, therefore, sent to the United States Public Health Service Laboratories at Chamblee, Ga., where, living organisms being used as antigen, a positive titre in dilutions of 1:16,000 for Lept. icterohaemorrhagiae and 1:2,048 for Lept. canicola was obtained. This method was considered far more sensitive than the method previously employed and was used chiefly as confirmatory evidence of the infection. An even later serological examination done with live organisms 78 days after admission showed a positive titre for Lept. icterohaemorrhagae in a dilution of 1:8,000 and for Lept. canicola in a dilution of 1:256.

COMMENT

It has become apparent that leptospirosis is a much commoner disease in this country than has been supposed.[5] Until recently there has been no effective specific treatment for it. The mortality of the disease has ranged between 4% and 60% in various series, with an over-all mortality of 30%.[6] Jaundice and nitrogen retention make the prognosis extremely grave.[6] The patient in our report was critically ill and, in spite of treatment with penicillin, became progressively worse. He was distinctly icteric, in profound uremia, and appeared moribund. Within 24 hours after the administration of terramycin hydrochloride, the patient exhibited dramatic clinical improvement. We realize that no definite conclusions can be drawn from such a single experience, but the pronounced sudden improvement in the clinical course of this patient after this drug was begun appears to be more than coincidental.

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3. Brainerd and others.[3b] Lurie.[31]

4. Gardner, A. D., and Wylie, J. A. H.: Laboratory Diagnosis of Weil's Disease, Lancet **1**: 955, 1946.

5. Sacks, M. S.: The Problem of Leptospirosis, Ann. Int. Med. **33**: 481, 1950. Ashe, W. F.; Pratt-Thomas, H. R., and Kumpe, C. W.: Weil's Disease: A Complete Review of American Literature and An Abstract of the World Literature: 7 Case Reports, Medicine **20**: 145, 1941.

6. Bertucci, E. A., Jr.: Leptospirosis, Am. J. M. Sc. **209**: 86, 1945.

BACTEROIDES ENDOCARDITIS

REPORT OF A CASE SUCCESSFULLY TREATED WITH TERRAMYCIN

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The organisms usually responsible for subacute bacterial endocarditis are of a low degree of invasiveness and are frequently or regularly present in the flora of the body cavities during health. Nonhemolytic streptococci, enterococci, influenza bacilli, and coagulase-negative staphylococci are most commonly recovered from the blood in such patients. Gram-negative, non-sporeforming, anaerobic bacilli of the genus Bacteroides are readily isolated from materials obtained from the nasopharynx, colon, and vagina in many persons. It is well known that they may cause serious suppurative disease, but are a rare cause of subacute bacterial endocarditis.[1]

This report describes a case in which a diagnosis of Bacteroides endocarditis was established, and in which therapy with terramycin was successful.

REPORT OF CASE

Mrs. A. V. was admitted to the hospital in January, 1950, for study of a febrile illness of nine months' duration. She had had rheumatic fever on two occasions (at the ages of 7 years and 13), but had otherwise been well and active.

Her present illness began with the discovery of fever during a routine prenatal examination by her physician in May, 1949. She had then been pregnant for six months. No clinical evidence of disease was discovered, and she felt quite well. Her maximum temperature varied between 100 and 102 F. daily, but she did not feel ill during the subsequent two months.

A blood culture was obtained when she was admitted to the hospital in July, 1949, for delivery. An organism was isolated, but details as to its nature are not available. Penicillin was administered for one month in unknown dosage, followed by 1 gm. daily of aureomycin for seven weeks. Treatment was concluded about Oct. 1, 1949.

Since that time she had felt very well. Serial blood cultures at fortnightly intervals were negative until Jan. 22, 1950, when an anaerobic gram-negative bacillus was recovered and she was admitted to Stanford University hospitals.

On examination the temperature was 99.5 F. rectally, and the pulse rate was 90 per minute. The heart was slightly enlarged and there were signs of aortic insufficiency and mitral stenosis. The spleen was palpable. No petechiae were seen. Laboratory investigation revealed a hemoglobin value of 12.0 gm. per 100 ml., red blood cell count of 4,050,000 per cubic millimeter and a total leukocyte count of 5,200 per cubic millimeter. The erythrocyte sedimentation rate (Westergren) was 20 mm. per hour. The urine was normal. Anaerobic gram-negative bacilli of the genus Bacteroides were isolated from the blood. The organism was inhibited by 1.0 γ of terramycin per milliliter, and 10 γ of streptomycin per milliliter. It grew in the presence of 1.0 unit of penicillin per milliliter.

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Terramycin used in this study was supplied through the courtesy of Dr. Gladys L. Hobby, Chas. Pfizer & Co., 11 Bartlet St., Brooklyn 6, N. Y.

This case was studied through the courtesy of Dr. Winston W. Benner.

1. Beigelman, P. M., and Rantz, L. A.: Clinical Significance of Bacteroides, Arch. Int. Med. **84**: 605 (Oct.) 1949.

2. Foley, G. E.: In Vitro Resistance of the Genus Bacteroides to Streptomycin, Science **106**: 423, 1947.

3. Beigelman and Rantz,[1] Smith, W. E., and Ropes, M. W.: Bacteroides Infections: Analysis Based on Review of Literature and Study of 20 Cases, New England J. Med. **232**: 31, 1945.

4. Cressy, N. L.; Lahey, W. H., and Kunkel, P.: Streptomycin in the Treatment of Bacterial Endocarditis: Report of 2 Cases, New England J. Med. **239**: 497, 1948.

Terramycin therapy was begun on Feb. 1, 1950, in a dose of 3.0 gm. per day by mouth and continued at this level until March 10, 1950, when the dose was reduced to 2.0 gm. per day. The drug was discontinued on April 7, 1950. Total duration of treatment was 66 days, and the total dose of terramycin was 170 gm. No toxic reaction of any kind referable to the administration of this large amount of terramycin was observed.

Bacteroides bacilli were never again isolated from the blood after institution of this regimen. The erythrocyte sedimentation rate was 4 mm. per hour on Feb. 24. A few conjunctival petechiae were seen during the first two weeks of treatment but not later.

When last examined on Oct. 1, 1950, twenty-five weeks after the withdrawal of terramycin, the patient was well and without evidence of change in her cardiac signs or reduction of cardiac reserve. The spleen was barely palpable. The erythrocyte sedimentation rate (Westergren) was 4 mm. per hour, and the blood was sterile.

COMMENT

Generalized septic processes caused by Bacteroides are not common, and the most suitable antimicrobial agents for use in such infections have not been defined. Penicillin and streptomycin have been believed to be of little value because of the high in vitro resistance of the organism to these substances.[2] Successful therapeutic results associated with the use of sulfonamides[3] have been described. There was recovery in a case of subacute bacterial endocarditis following the administration of sulfadiazine, streptomycin, and penicillin.[4] Reports of the use of the newer antibiotics having broad antibacterial spectra have not come to my attention.

In this case therapy with penicillin, followed by small doses of aureomycin, was ineffective. The organism isolated from the blood was inhibited by small amounts of terramycin, and the infection was permanently eradicated when large amounts of this drug were administered for two months. The complete absence of gastrointestinal or other toxicity was noteworthy. The further trial of terramycin in Bacteroides infection is obviously indicated.

SUMMARY

A case of subacute bacterial endocarditis caused by a member of the genus Bacteroides is described. The infection was eradicated by the administration of large amounts of terramycin for two months.

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INTESTINAL BLEEDING ASSOCIATED WITH ACETYLSALICYLIC ACID

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Serious toxic reactions to the salicylates are rare in relation to the widespread use of this group of drugs. In the present case it was possible to establish a causal relationship between prolonged intestinal bleeding and the taking of acetylsalicylic acid. Hypoprothrombinemia has been reported after ingestion of the salicylates, and this has been ascribed to the bishydroxycoumarin-like action of the salicylates.[1] There is a report of thrombopenia

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1. Smith, P. K.: Certain Aspects of the Pharmacology of the Salicylates, J. Pharmacol. & Exper. Therap. **97**: 353 (Dec., pt. 2) 1949.

with purpura and death after ingestion of salicylates,[2] but clear proof is lacking that they were the cause of the disease.

REPORT OF A CASE

The patient, an intelligent, well developed, otherwise healthy male, 74, had continuous intestinal bleeding of undetermined origin for eight years. The symptoms were anemia and weakness. Blood was always found in the stools; sometimes there was bright red streaking of the stools, frequently there was sufficient blood to color the water in the toilet bowl deeply, and when blood was not visible it could be detected by chemical tests. When the anemia was first noted, in 1942, the patient was thoroughly examined in a medical center in another city. Blood was found in the stools. A polyp was found at the rectosigmoid junction and was cauterized. The bleeding and anemia continued. The patient was given iron, and the hemoglobin rose to normal.

In 1944 and again in 1945 he was examined in two medical centers in this city. At the first examination, nothing but the anemia and blood in the stools was found, at the second, a small hiatus hernia was found at the cardiac end of the stomach. In view of the otherwise normal observations, it was conjectured that ulceration of the mucosa of the hernial sac might be the cause of the bleeding. It is to be noted that in the aforementioned examinations there was a complete x-ray examination of the gastrointestinal tract, as well as direct examinations of the visible portions of the rectum and colon through the sigmoidoscope. There is no record of platelet counts or prothrombin time determinations. There were no other observations that had any bearing on the problems presented. For the relief of the pain of osteoarthritis of the right knee, the patient for many years had been in the habit of taking acetylsalicylic acid (aspirin) in amounts of approximately 3 Gm. daily.

When there was no iron therapy, the hemoglobin would sink to levels ranging from 7 to 9 Gm., with the red blood cell count between 3½ and 5 million. Treatment consisted of ferrous sulfate, in oral doses of from 1 to 1.5 Gm. three times daily. The diet was rich in vitamins and meat. When the patient was placed on such a regimen, the hemoglobin soon rose, despite the continued bleeding. When iron therapy was discontinued, the hemoglobin would fall and the weakness would appear. After a few such experiences, the patient was given iron therapy on a permanent basis, and he accepted the intestinal bleeding as a permanent feature of his life. Such a plan was followed satisfactorily, and the patient continued in his business without any difficulties arising from the intestinal bleeding.

On Aug. 12, 1949, he had an acute intestinal obstruction due to carcinoma, for which the bowel was resected. It was now assumed that this had been the cause of the bleeding and had somehow escaped detection. No metastases were found at operation. During the patient's hospital stay acute prostatic obstruction developed and a prostatectomy was performed. The prothrombin time was normal, and hemostasis was not difficult during the operations. The patient received five postoperative transfusions. There was no blood in his stools during the hospital stay. On his discharge, on Nov. 5, 1949, the blood cell count was normal, there was no blood in the stools, and the bowel was normal by direct and x-ray examinations. The patient was free of all symptoms other than pain in his knee. He had taken no acetysalicylic acid in the hospital, but on his return home the pain in his knee caused him to take it again. He was seen again on Nov. 23, 1949. There was intense pallor, weakness, dyspnea, edema of the ankles, and gross blood in the stools. The hemoglobin was 6.5 Gm. The bowel was reexamined, but no cause for the bleeding was found. The dose of iron was increased, but the hemoglobin did not rise above 9 Gm.

Then, for the first time in the history of bleeding and anemia, acetylsalicylic acid was considered as a possible etiological factor in the bleeding. This might be an instance of a bishydroxycoumarin-like effect of therapeutic doses of a salicylate. An experiment was designed to test this possibility and was outlined to the patient. He was most cooperative. He kept a precise and detailed daily protocol, including a list of the drugs he took, the time and number of stools (usually about three a day), and the result of a gross examination of each stool. Because of the prolonged course of the experiment, it was not feasible to keep the patient on the constant meatless diet that examinations of the stools for occult blood would have required.

The use of acetylsalicylic acid was to be discontinued. If the bleeding stopped, after a period of about two weeks this drug was to be resumed and continued until blood reappeared in the stools. This procedure was to be repeated several times. At critical points, determinations were to be made of hemoglobin, red blood cells, prothrombin time, and platelets. Arrangements were made so that when blood appeared in the stools these determinations could be made without delay. The dose of iron remained constant throughout.

The table summarizes the results. About two to three days after the patient stopped taking acetylsalicylic acid, gross blood disappeared from the stools. About two weeks after administration of the drug was resumed, blood was seen in the stools. It will be noted in the table that there were three periods of intestinal bleeding, which correspond to ingestion of acetylsalicylic acid, and three periods without visible blood, which correspond to abstinence. On June 2, 1950, there was no occult blood in the stools (this was the first negative determination for occult blood in eight years), hemoglobin was 13.5 Gm., and iron therapy was discontinued. The patient was without iron therapy for a significant period for the first time in eight years. When he was last examined on Oct. 28, 1950, he appeared well and his hemoglobin was 13.7 Gm. No blood had been observed in the stools since he had discontinued taking acetylsalicylic acid (April 10, 1950). He received no medication for his joint pains, preferring the pain to the problems attending the intestinal bleeding.

Observations in Patient Studied

Dates *	Length of Period (Days)	Gross Blood in Stools	Hemoglobin (Gm.)	Red Blood Cells (Millions)	Platelets (Thousands)	Prothrombin Time (Sec.)
11/23—12/14 †.....	22	Present	6.5-9.0	...	...	....
12/15—2/8/50.....	55	Absent	12.3	4.7	...	14
2/9—2/22 †.....	14	Absent				
2/23 †.....	1	Present	13.0	4.6	120	14
2/24—2/25.....	2	Present				
2/26—3/19.....	21	Absent	12.0	4.9	340	13.7
3/20—4/5 †.....	16	Absent				
4/6 †.....	1	Present	12.2	4.0	215	16.1
4/7—4/9.....	3	Present				
4/10—10/28.....	202	Absent	13.7	4.7	240	14.4

* Period covered, November, 1949—April, 1950.
† Acetylsalicylic acid given.

Our data, unfortunately, only hint at a mechanism of the bleeding. The hemoglobin and red blood count did not change significantly during the experimental period, but this is unquestionably due to the fact that acetylsalicylic acid ingestion was stopped and that the bleeding was not permitted to continue for more than a few days after it was discovered. Before the experiment, the low hemoglobin and red blood cell count had developed after long periods of bleeding. The prothrombin time was normal on all examinations, and it may be assumed that a bishydroxycoumarin-like action played no role in the bleeding. There is the observation of a platelet count of 120,000 after a two week period of acetylsalicylic acid therapy, but there is another count of 215,000 after a similar period of administration of this drug. One of the platelet counts when the drug was not taken was as high as 340,000; another was as low as 240,000. The possibility that the intestinal bleeding was associated with thrombopenia rests, therefore, on the single platelet count of 120,000.

In only one report,[2] already mentioned, was thrombopenia ascribed to the salicylates. It was a case of a patient with purpura and extensive hemorrhages, who had taken

2. Rappoport, A. E.; Nixon, C. E., and Barker, W. A.: Fatal Secondary, Toxic Thrombocytopenic Purpura Due to Sodium Salicylate: Report of a Case, J. Lab. & Clin. Med. **30**: 916 (Nov.) 1945.

salicylates and who was not saved by splenectomy. It was reasoned by the authors that, since in true idiopathic purpura splenectomy is usually effective, the failure in this case indicates that salicylate was the cause of the purpura. While the thrombopenia is definite, the evidence for an etiological connection between it and salicylates is tenuous. In the present case the acetylsalicylic acid is clearly the cause of the bleeding, but that it is also associated with thrombopenia is only suggested and not proved by the experiment.

SUMMARY

A case of intestinal bleeding for eight years is described. During the eight year period, a polyp, hiatus hernia, and carcinoma of the colon were discovered, and each, when found, was thought to be the cause of the bleeding. It is demonstrated, however, that acetylsalicylic acid (aspirin), which the patient had prescribed for himself, was the etiological agent in this case.

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CONTROL OF PULMONARY EMBOLI BY INFERIOR VENA CAVA LIGATION

REPORT OF A CASE

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Indications for a vena cava ligation to prevent thromboembolism are few, but when these conditions exist, the results of this type of surgery are dramatic and life-saving. It is my belief that once a clot large enough to occlude the pulmonary artery is present in a vein, a mechanical block between that clot and lung should not be delayed.[1] It is admitted that anticoagulants may prevent propagation of clots, but, in the light of our present knowledge, we do not know such therapy can dissolve a clot which has already been formed.[2] If a clot is present, therefore, in the large vessels, i. e., the upper femorals, iliac veins, or vena cava, only by a physicial block in the pathway of clot movement can possible death be prevented. This type of therapy is not used alone or to the exclusion of anticoagulants — anticoagulant therapy is always used in addition. The following history is an illustration of complications sometimes seen by those who specialize in this type of work. The patient described also presents an example of how some patients with this disease have been maltreated in the past.

REPORT OF A CASE

A white American man, aged 41, was working in Texas when, in 1949, sudden pain developed in his right leg. That day he had pain in his chest and subsequently coughed up some bloody sputum. He was hospitalized locally for three days with an asymptomatic course and no specific therapy, and he was then permitted to return to his work. There was a recurrence of the pain in his leg immediately, and more coughing of blood. An x-ray of his chest was then taken, which showed at least two areas of pulmonary infarction. The therapy, at that time, consisted of transporting the patient to an airport, putting him on an airplane, and sending him back to his home in New Jersey.

On his arrival home, he was hospitalized at the local hospital, and the right superficial femoral vein was ligated. He was also given 200 mg. of bishydroxycoumarin (dicumarol®), and his prothrombin time rose to 62 sec. (control, 19). The next night, he had another pulmonary embolism, and the left superficial femoral vein was then ligated. The following day, the prothrombin level continued elevated. The next day, there were severe dyspnea, cyanosis, and pain in his chest with hemoptysis. He was then referred to my care in New York. On his admission to a hospital in New York, there was some edema of the right leg with pain in the right popliteal space. He had dilated "sentinel veins" [2a] over the right tibia, and there were cyanosis, extensive dyspnea, and a questionable Homan's sign. The patient had to sit up to get his breath. There was persistent tenderness, also, in the right lower quadrant of the abdomen, and the patient stated he had been constipated since he had left Texas four days before. On urinalysis, there were some red blood cells found in the urine. In New York the prothrombin level was still elevated to 54.

The problem, then, was one of a patient having repeated pulmonary emboli, even with a high prothrombin level and after superficial femoral ligations. The clots thus were very high, or in the femoral profunda system. It was decided to ligate the inferior vena cava at once. At that time, his prothrombin level still was 52. Because of the pain in the right lower quadrant, it was elected to go through the peritoneum for the vena cava ligation. The abdominal contents were displaced upward, the retroperitoneum incised just above the bifurcation of the aorta, and the vena cava dissected free and ligated in continuity with No. 2 nonabsorbable surgical sutures (silk), three sutures being placed about ⅛ in. (0.32 cm.) apart. A right lumbar sympathectomy was performed at the same time. There was no palpable clot in the vena cava at the operation site. Upon closing the retroperitoneum, the appendix was delivered, and gangrenous appendicitis, with localized peritonitis, was discovered. The appendix was removed, and the patient's abdomen was closed without drainage.

The patient immediately improved; the chest signs responded to antibiotics; the swelling in the right leg subsided, thereafter, and the part was warm and he had no further trouble with that leg. Each time the patient started to walk, however, he would have severe pain in his left leg and that foot would blanch and go into spasm. Sympathetic nerve blocks would relax this spasm each time. It was evident that he was having reflex arterial spasm in the left leg. One week thereafter, because of continuation of the symptoms, a retroperitoneal left lumbar sympathectomy was performed. There was no further trouble in either leg, and the patient made an uneventful recovery. The pathological report showed acute suppurative appendicitis with multiple abscesses in the wall. The patient's prothrombin level remained above normal for approximately five days. It was then maintained with small doses of bishydroxycoumarin thereafter for a period of two more weeks.

COMMENT

This patient's history is detailed because it points up many facts needing emphasis:

1. The lack of understanding of this thromboembolism problem which exists in the general medical field is shown by the fact that this patient was sent back to work three days after an embolism to his lung, and later was sent on a long transcontinental trip after a second one without therapy.

2. The subsequent events emphasize the inadequacy of superficial femoral ligation to prevent further pulmonary emboli where large clots already exist.[3]

From the Vascular Clinic of St. Vincent's Hospital and New York University College of Medicine.

1. Pratt, G. H.: Surgical Management of Vascular Diseases, Philadelphia, Lea & Febiger, 1949, p. 357. Classification and Treatment of Varicose, Post-Thrombotic and Arterial Venous Problem, Bull. New York Acad. Med. **26**: 306-328 (May) 1950.

2. Marple, C. D., and Wright, I. S.: Thromboembolic Conditions and Their Treatment with Anticoagulants, Springfield, Ill., Charles C Thomas, Publisher, 1950, p. 63.

2a. Pratt, G. H.: An Early Sign of Femoral Thrombosis, J. A. M. A. **140**: 476 (June) 1949.

3. Marple and Wright,[2] Rottino, A.; Boller, R., and Pratt, G. H.: Therapeutic Action of Muscle Adenylic Acid on Ulcers and Dermatitis Associated with Varicose or Phlebitic Veins: Preliminary Report, Angiology **1**: 194 (April) 1950.

3. The extreme sensitivity of some patients to bishydroxycoumarin (dicumarol®) is demonstrated. It proves that pulmonary emboli can occur if a large clot is already present, even with a persistently high anticoagulant therapeutic level. (Causes for abnormal sensitivity to anticoagulants in this patient and in other patients are not discussed.)

4. This case shows the development of acute appendicitis, which might readily have been missed by the usual retroperitoneal approach to the vena cava. It emphasizes, again, the fact that any right lower quadrant pain in the abdomen, despite any other condition, must be considered to be caused by appendicitis until one has proved otherwise. If the appendix is in situ, the proof should be by laparotomy.

5. The control of multiple pulmonary emboli by vena cava ligation, when specifically indicated, is proved.

6. The role of arterial spasm following major vessel occlusion is illustrated, as is its relief by sympathectomy on both the right and left sides.[4] In retrospect, left lumbar sympathectomy should have been performed at the time of the vena cava ligation. At the time of operation, however, with the pathological conditions present in the right leg only, it was thought that the extra operative time necessary to dissect out the left lumbar sympathetic chain was not indicated.

7. The complexity of thromboembolism in certain instances is apparent.

30 E. 60th St.

4. Pratt, G. H.: The Present Status of Sympathectomy in the Treatment of Vascular Diseases, Angiology **1**: 9 (Feb.) 1950. Surgical Management of the Post-Thrombotic Syndrome, Ann. West. Med. & Surg. **4**: 82 (Feb.) 1950.

COUNCIL ON PHARMACY AND CHEMISTRY

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Aminophylline-U.S.P. (See New and Nonofficial Remedies 1951, p. 297).

Tablets Aminophylline: 0.1 gm. and 0.2 gm. Meyer Chemical Company, Detroit.

Amphetamine Sulfate-U.S.P. (See New and Nonofficial Remedies 1951, p. 188).

Tablets Amphetamine Sulfate: 5 mg. and 10 mg. Physicians' Drug and Supply Company, Philadelphia.

Dehydrocholic Acid-N.F. (See New and Nonofficial Remedies 1951, p. 314).

Tablets Dehydrocholic Acid: 0.24 gm. S. E. Massengill Company, Bristol, Tenn.

Dienestrol (See New and Nonofficial Remedies 1951, p. 340).

Tablets Dienestrol: 10 mg. White Laboratories, Inc., Newark, N. J.

Isopropylarterenol Hydrochloride (See New and Nonofficial Remedies 1951, p. 191).

Sublingual Tablets Aludrine Hydrochloride: 5 mg. and 10 mg. Eli Lilly & Company, Indianapolis.

Mannitol Hexanitrate (See New and Nonofficial Remedies 1951, p. 232).

Tablets Mannitol Hexanitrate: 30 mg. Keith-Victor Pharmacal Company, St. Louis.

Mephenesin (See New and Nonofficial Remedies 1951, p. 165).

Tablets Mephenesin: 0.25 gm. and 0.5 gm. Premo Pharmaceutical Laboratories, Inc., South Hackensack, N. J.

Mersalyl and Theophylline Injection-U.S.P. (See New and Nonofficial Remedies 1951, p. 295).

Solution Mersalyl and Theophylline: 2 cc. ampuls. A solution containing 0.1 gm. mersalyl (equivalent to 39.6 mg. mercury) and 50 mg. of theophylline in each cubic centimeter. S. E. Massengill Company, Bristol, Tenn.

Methamphetamine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1951, p. 193).

Tablets Semoxydrine Hydrochloride: 2.5 mg., 5.0 mg. and 7.5 mg. S. E. Massengill Company, Bristol, Tenn.

Penicillin for Oral or Sublingual Administration (See New and Nonofficial Remedies 1951, p. 122).

Flavored Tablets Crystalline Potassium Penicillin G (Buffered): 50,000 units. Buffered with 0.3 gm. calcium carbonate. Rexall Drug Company, Los Angeles.

Pyrilamine Maleate (Formerly Pyranisamine Maleate. See New and Nonofficial Remedies 1951, p. 13).

Tablets Pyrilamine Maleate: 25 mg. Paul B. Elder Company, Bryan, Ohio.

Sodium Ascorbate Injection-U.S.P. (See New and Nonofficial Remedies 1951, p. 432).

Solution Sodium Ascorbate: 2 cc. ampuls. A solution containing the equivalent of 50 mg. of ascorbic acid as sodium ascorbate in each cubic centimeter. 5 cc. and 10 cc. vials. A solution containing the equivalent of 100 mg. of ascorbic acid as sodium ascorbate in each cubic centimeter. The Smith-Dorsey Company, Lincoln, Neb.

Dia-Men-Sulfonamides (See New and Nonofficial Remedies 1951, p. 101).

Suspension Bisulfon with Sodium Lactate: 480 cc. and 3.84 liter bottles. A suspension containing 50 mg. sulfadiazine and 50 mg. sulfamerazine and 0.1 gm. of sodium lactate in each cubic centimeter. Veltex Company, Birmingham, Ala.

Testosterone Propionate-U.S.P. (See New and Nonofficial Remedies 1951, p. 363).

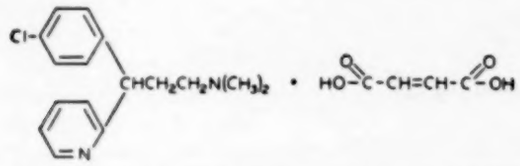
Solution Testosterone Propionate in Oil: 10 cc. vials. A solution containing 50 mg. of testosterone propionate in each cubic centimeter. Preserved with 0.5 per cent chlorobutanol. Metropolitan Laboratories, Inc., Oyster Bay, N. Y.

Tetracaine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1951, p. 40).

Pontocaine Hydrochloride "Niphanoid" for Spinal Anesthesia: Ampuls containing 15 mg. of tetracaine hydrochloride. Winthrop-Stearns, Inc., New York.

Solution Pontocaine Hydrochloride for Caudal Anesthesia: 100 cc. bottles. An isotonic solution containing 1.5 mg. of tetracaine hydrochloride in each cubic centimeter. Winthrop-Stearns, Inc., New York.

Chlorprophenpyridamine Maleate.—Chlor-Trimeton Maleate (Schering).—$C_{16}H_{19}ClN_2.C_4H_4O_4$.—M.W. 390.86.—1-(*p*-Chlorophenyl)-1-(2-pyridyl)-3-dimethylaminopropane maleate.—The structural formula of chlorprophenpyridamine maleate may be represented as follows:



Actions and Uses.—Chlorprophenpyridamine maleate has good therapeutic efficacy and low incidence of side effects. Its low dosage does not appear to give it any particular therapeutic advantage over other antihistamines.

Dosage.—The average adult dose is 2 to 4 mg.

Tests and Standards.—

Physical Properties: Chlorprophenpyridamine maleate is a white, crystalline solid which melts between 130.0 and 135°. One part of chlorphenpyridamine maleate is soluble in 3.4 parts of water, in 10 parts of alcohol and in 10 parts of chloroform, and is slightly soluble in benzene and ether. The pH of a 1% solution is about 4.8.

Identity Tests: Dip a clean copper wire in a paste made by mixing about 50 mg. of chlorprophenpyridamine maleate with a few drops of water and hold it in the nonluminous portion of the flame of a Bunsen burner: the flame turns green (*presence of chlorine and distinction from prophenpyridamine*).

Dissolve about 0.5 gm. of chlorprophenpyridamine maleate in 10 ml. of water. Make the solution alkaline with sodium hydroxide T.S. and extract the liberated base with 20 ml. of chloroform. Add 20 ml. of a saturated solution of picric acid in alcohol (about 60 mg./ml. of alcohol) previously heated to 65°. Digest the reaction mixture at 65° for about 20 min., add 20 ml. of alcohol and keep at 65° for about 10 min. longer. A fine yellow crystalline precipitate forms. Filter the mixture and dry the crystals in a vacuum for 4 hours and then at 105° for 4 hours: the yellow crystalline picrate obtained melts between 197 and 200°.

A 0.003 per cent solution prepared as described later in the assay for chlorprophenpyridamine maleate exhibits an ultraviolet absorption maximum at 2,620 A. [specific absorbancy, E(1%, 1 cm.), is 143 ± 3], an inflection at about 2,680 A. and a minimum at about 2,430 A.

Purity Tests: Dissolve about 0.3 gm. of chlorprophenpyridamine maleate in 2 ml. of alcohol, add 5 drops of chloroform and 0.5 ml. of 50% potassium hydroxide, and heat: a red color develops, but no odor of isonitriles (*absence of primary amines*).

Dry about 1 gm. of chlorprophenpyridamine maleate, accurately weighed, for 4 hours at 105°: the loss in weight is not more than 0.5%.

Ignite about 0.5 gm. of chlorprophenpyridamine maleate, accurately weighed: the residue is not more than 0.15%.

Assay: (Chlorprophenpyridamine Maleate) Transfer 0.3 gm. of chlorprophenpyridamine maleate, accurately weighed, to a 100 ml. volumetric flask and dilute to the mark with water. Mix thoroughly and transfer 10 ml. of the solution to another 100 ml. volumetric flask. Dilute to 100 ml. with water, mix well and transfer 10 ml. of the solution to a third 100 ml. volumetric flask and dilute to 100 ml. with water. The final solution (0.003%) exhibits an ultraviolet absorption maxmum at 2,620 A. [specific absorbancy, E(1%, 1 cm.), 143 ± 3].

(Nitrogen) Transfer about 0.15 gm. of chlorprophenpyridamine maleate, accurately weighed, to a semi-micro Kjeldahl flask and digest it for 4 hours with 7 ml. of sulfuric acid, 2.7 gm. of potassium sulfate and 0.3 gm. of mercuric oxide. Dilute the clear solution to 15 ml. with water, make it alkaline with 40% sodium hydroxide and then add 10 ml. of 40% sodium thiosulfate. Distil the ammonia into 20 ml. of 4% boric acid. Using a mixed indicator (1 part of methyl red T.S.: 5 parts of bromocresol green T.S.), titrate the liberated ammonia with 0.05 *N* sulfuric acid. Each milliliter of 0.05 *N* sulfuric acid is equivalent to 0.0007004 gm. of nitrogen and to 0.01954 gm. of chlorprophenpyridamine maleate. The amount of nitrogen present is not less than 7.0% nor more than 7.4%, equivalent to not less than 97.5% nor more than 102.5% of chlorprophenpyridamine maleate.

Dosage Forms of Chlorprophenpyridamine Maleate

TABLETS. *Identity Tests:* Dip a clean copper wire in a paste made by mixing about 0.1 gm. of the powdered tablets with a few drops of water and hold it in the nonluminous portion of the flame of a Bunsen burner: the flame turns green (*presence of chlorine and distinction from prophenpyridamine*).

Crush 75 tablets, suspend the powder in 40 ml. of water, make the suspension alkaline with sodium hydroxide T.S. and extract the liberated base with 20 ml. of chloroform. Proceed as directed in the identity tests for chlorprophenpyridamine maleate starting with "Add 20 ml. of a saturated solution of picric acid in alcohol. . . ."

Assay: (Chlorprophenpyridamine Maleate) Weigh 20 tablets and grind them. Accurately weigh the equivalent of 0.004 gm. of chlorprophenpyridamine maleate, transfer it to a 100 ml. volumetric flask and dilute to the mark with water. Mix thoroughly, filter the mixture through a dry filter paper, discarding the first 25 ml. of filtrate, and measure the optical density in a 1 cm. quartz cell with a spectrophotometer at 2,620 A. Calculate the amount of chlorprophenpyridamine maleate from the specific absorbancy, E (1%, 1 cm.) = 143 ± 3. The amount of chlorprophenpyridamine maleate present is not less than 90.0% nor more than 110.0% of the labeled amount.

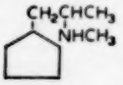
SYRUP. *Identity Tests:* Make 200 ml. of the syrup alkaline with sodium hydroxide T.S. and extract the liberated base with three 20 ml. portions of chloroform. Combine the extracts, filter them and evaporate the solvent. Dip a clean copper wire in a paste made by mixing about 10 mg. of the residue obtained with a drop of water and hold it in the nonluminous portion of the flame of a Bunsen burner: the flame turns green (*presence of chlorine and distinction from prophenpyridamine*). With the rest of the residue proceed as directed in the identity tests in the monograph for Chlorprophenpyridamine Maleate starting with "Add 20 ml. of a saturated solution of picric acid in alcohol. . . ."

Assay: (Chlorprophenpyridamine Maleate) Evaporate 200 ml. of syrup to approximately 150 ml. on a steam bath. Cool and extract the residue with two 100 ml. portions of petroleum ether and discard the petroleum ether. Bring the residual solution to a pH of 11 with 20% sodium hydroxide and saturate it with sodium chloride. Extract the liberated base with seven 35 ml. portions of petroleum ether. Combine the extracts and wash them with two 5 ml. portions of saturated sodium chloride (about 0.4 gm. per milliliter of water). Combine the sodium chloride washes, extract them with 10 ml. of petroleum ether and add this extract to the main portion. Evaporate the petroleum ether, dissolve the residue in 25 ml. of alcohol and add exactly 35 ml. of 0.02 *N* sulfuric acid. Back-titrate with 0.02 *N* sodium hydroxide to an endpoint of pH 6.8 using chlorophenol red or some other suitable indicator. Each milliliter of 0.02 *N* sulfuric acid consumed is equivalent to 0.007817 gm. of chlorprophenpyridamine maleate. The amount of chlorprophenpyridamine present is not less than 90.0% nor more than 110.0% of the labeled amount.

Syrup Chlor-Trimeton Maleate: 473 cc. bottles. A flavored solution containing 0.5 mg. of chlorprophenpyridamine in each cubic centimeter. Schering Corporation, Bloomfield, N. J.

Tablets Chlor-Trimeton Maleate: 4 mg. Schering Corporation, Bloomfield, N. J.

Cyclopentamine Hydrochloride.—Clopane Hydrochloride (Lilly).—$C_9H_{19}N.HCl$.—M.W. 177.72.—N,α-Dimethylcyclopentaneëthylamine hydrochloride.—1-Cyclopentyl-2-methylaminopropane hydrochloride.—The structural formula of cyclopentamine hydrochloride may be represented as follows:



Actions and Uses.—Cyclopentamine hydrochloride has the actions and uses of sympathomimetic amines. It produces systemic pressor and local vasoconstrictor effects similar to those of ephedrine; but, unlike ephedrine, produces only slight cerebral excitation. Given orally it is more effective than ephedrine.

The drug is administered by injection as an adjunct to other measures for maintaining blood pressure in operative procedures and in types of cardiovascular collapse where sympathomimetic drugs are not contraindicated. It is also useful by topical application for the temporary relief of nasal congestion. Its local vasoconstrictor action does not appreciably interfere with ciliary movements.

Like other sympathomimetic agents, cyclopentamine hydrochloride should not be injected in patients with hyperthyroidism; and should be used with caution in patients with hypertension. Too frequent topical application should also be avoided to prevent such side effects as increased blood pressure, nervousness, nausea and dizziness, particularly in patients susceptible to vasoconstrictor agents.

Dosage.—As a nasal decongestant, a 0.5% solution is applied topically by means of dropper, spray, or tampon. Drops should be instilled with the head in the lateral head-low position; when stinging is encountered the solution may be diluted with isotonic sodium chloride solution.

As a pressor agent to maintain blood pressure during spinal anesthesia or surgery, a dose of 25 mg. in 1 cc. of solution is recommended. It is injected intramuscularly just prior to administration of the anesthetic, with subsequent fractional doses as needed. To combat a rapid fall in blood pressure the drug may be administered intravenously, but by this route the drug must be injected very slowly and in doses not exceeding 5 to 10 mg. in order that the full effect of each dose may be determined.

Tests and Standards.—

Cyclopentamine hydrochloride is a white, odorless, crystalline powder with a mild characteristic odor and a bitter taste. It melts between 113.0 and 116.0°. One part of cyclopentamine hydrochloride is soluble in 1.0 part of water, in 1.8 parts of alcohol, in 23.8 parts of benzene and in 1.3 parts of chloroform, and is slightly soluble in ether. The pH of a 1% solution is about 6.2.

Identity Tests: Add 0.5 gm. of sodium nitrite to a solution of about 50 mg. of cyclopentamine hydrochloride in 2 ml. of water and boil gently about 30 sec. A turbidity may develop. Cool and add about 1.5 ml. of

hydrochloric acid dropwise with additional cooling, if necessary: a yellowish orange, oily material separates. Add more hydrochloric acid dropwise, with agitation, until the oily layer disappears and a white precipitate forms. Decant the supernatant liquid and add about 5 ml. of water: the precipitate dissolves *(presence of a secondary amine)*.

Dissolve about 0.5 gm. of cyclopentamine hydrochloride in 10 ml. of water, and add 0.5 ml. of diluted nitric acid and 1 ml. of silver nitrate T.S.: a white precipitate forms which dissolves in 10 ml. of ammonium hydroxide T.S. *(presence of chloride)*.

Dissolve about 0.5 gm. of cyclopentamine hydrochloride in 5 ml. of diluted sulfuric acid and 20 ml. of water, and add about 1 gm. of potassium cyanate. Heat on a steam bath for 1 hour, cool and filter. Dissolve the residue in 25 ml. of boiling water, filter while hot, cool and again filter. Recrystallize the precipitate from boiling water and dry it at 80° for 4 hours: the white crystals melt between 126.0 and 129.0°.

Purity Tests: Dissolve about 0.3 gm. of cyclopentamine hydrochloride in 2 ml. of water, add 5 drops of chloroform, 2 ml. of alcohol and 0.5 ml. of 50% potassium hydroxide, and heat: no odor of isonitriles is obtained *(absence of primary amines)*.

Dry about 1 gm. of cyclopentamine hydrochloride, accurately weighed, for 3 hours at 80°: the loss in weight is not more than 0.4%.

Ignite about 1 gm. of cyclopentamine hydrochloride, accurately weighed: the residue is not more than 0.05%.

Assay: (Cyclopentamine Hydrochloride) Transfer about 0.25 gm. of cyclopentamine hydrochloride, accurately weighed, to a 500 ml. Kjeldahl flask. Add 200 ml. of water and a few boiling stones. Connect the flask with a suitable condenser and add 50 ml. of 50% sodium hydroxide. Distil the liberated base into a 250 ml. Erlenmeyer flask containing exactly 40 ml. of 0.05 *N* hydrochloric acid (equivalent to 100 ml. of 0.02 *N* hydrochloric acid), keeping the tip of the condenser beneath the surface of the acid during the distillation. Collect at least 150 ml. of distillate, cool if necessary, and titrate the excess acid with 0.02 *N* sodium hydroxide, using methyl red T.S. as an indicator. Run a blank determination with the same quantities of reagents and in the same manner, and make any necessary corrections. Each milliliter of 0.02 *N* hydrochloric acid consumed is equivalent to 0.003554 gm. of cyclopentamine hydrochloride. The amount of cyclopentamine hydrochloride present is not less than 98.0% nor more than 102.0%.

Dosage Forms of Cyclopentamine Hydrochloride

SOLUTION. *Identity Tests:* Make alkaline with sodium hydroxide T.S. a volume of solution equivalent to about 50 mg. of cyclopentamine hydrochloride, extract the liberated base with 20 ml. of ether and evaporate the ether on a steam bath. Dissolve the residue in 2 ml. of water and add 5 drops of diluted hydrochloric acid. Add 0.5 gm. of sodium nitrite and boil gently about 30 sec. A turbidity may develop. Proceed as directed in the identity tests in the monograph for Cyclopentamine Hydrochloride starting with, "Cool and add about 1.5 ml. of hydrochloric acid dropwise. . . ."

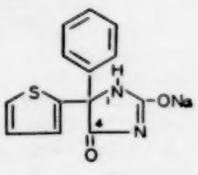
Make alkaline with sodium hydroxide T.S. a volume of solution equivalent to about 0.5 gm. of cyclopentamine hydrochloride, extract the liberated base with 35 ml. of ether and evaporate the ether on a steam bath. Dissolve the residue in 5 ml. of diluted sulfuric acid and 20 ml. of water, and add about 1 gm. of potassium cyanate. Proceed as directed in the identity tests in the monograph for Cyclopentamine Hydrochloride starting with "Heat on a steam bath for 1 hour. . . ."

Assay: (Cyclopentamine Hydrochloride) Transfer a portion of the solution, accurately measured, equivalent to about 0.25 gm. of cyclopentamine hydrochloride to a 500 ml. Kjeldahl flask. Proceed as directed in the assay in monograph for Cyclopentamine Hydrochloride starting with "Add 200 ml. of water. . . ." The amount of cyclopentamine hydrochloride present is not less than 95.0% nor more than 105.0% of the labeled amount.

Solution Clopane Hydrochloride: 1 cc. ampuls. A solution containing 25 mg. of cyclopentamine hydrochloride in each cubic centimeter. Eli Lilly & Company, Indianapolis.

Topical Solution Clopane Hydrochloride 0.5%: 30 cc., 475 cc. and 3.78 liter bottles. An isotonic solution containing 5 mg. of cyclopentamine hydrochloride in each cubic centimeter. Preserved with phenylmercuric nitrate 1: 50,000. Eli Lilly & Company, Indianapolis.

Phethenylate Sodium.—Thiantoin Sodium. (Lilly).—Sodium 5-phenyl-5-(2-thienyl)hydantoinate. — $C_{13}H_9N_2NaO_2S$. — M.W. 280.28.—The structural formula for phethenylate sodium may be represented as follows:



Actions and Uses.—Phethenylate sodium is a hydantoin derivative with pronounced anticonvulsant activity. It shares the antiepileptic action of other hydantoin compounds, but differs in that it may be used to control petit mal as well as grand mal epilepsy and psychomotor seizures. Hypertrophic gingivitis and dermatitis medicamentosa have been observed in a small percentage of cases treated. These effects may require temporary withdrawal of the drug. Development of vertigo, ataxia, or disequilibrium are indications for immediate cessation of therapy.

The rare occurrence of severe blood dyscrasias such as leukopenia and thrombocytopenia should be anticipated by blood studies made periodically to permit early withdrawal of the drug if necessary. Patients should be carefully watched for symptoms of agranulocytic angina or hemolytic anemia.

Dosage.—The dosage varies according to the needs of the patients; it should be adjusted to the minimum necessary to control seizures. For the majority of adults, 0.13 gm. two to four times daily is usually adequate. Larger doses may sometimes be required. The optimal dose is best determined by starting with 0.13 gm. once or twice daily. If toxic manifestations develop, the dose should be reduced, supplemented by adding another drug, or replaced completely by other agents indicated by the circumstances in each case. Specific dosages for children cannot be given because they are determined according to clinical effects rather than weight. Transition from anticonvulsant drugs, including phenobarbital, should be made gradually, with some overlapping in dosage to avoid increase in seizures; when used in combination with phenobarbital or similar agents, smaller doses of both drugs are required.

Tests and Standards.—

Physical Properties: Phethenylate sodium is a white, odorless, hygroscopic, microcrystalline powder. On exposure to air it gradually absorbs carbon dioxide with a corresponding liberation of 5-phenyl-5-thienyl hydantoin. In aqueous solution it gradually dissociates. One part of phethenylate sodium is soluble in 2.0 parts of water and in 5.0 parts of alcohol. It is very slightly soluble in ether, and is practically insoluble in benzene and chloroform. The pH of a 1% solution is about 10.0.

Identity Tests: Heat gently about 1 gm. of phethenylate sodium in a platinum dish with 1 ml. of sulfuric acid until no more fumes of sulfur trioxide are evolved. The residue obtained responds to tests for sodium in *U. S. P. XIV*, p. 724.

To a dispersion of about 20 mg. of phethenylate sodium in 3 ml. of thiophene-free benzene add a solution of about 10 mg. of isatin in 1 ml. of sulfuric acid and shake vigorously for about 1 min.: the acid layer becomes green to dark green and turns blue after about 1 hour. Run a blank on the reagents: no color develops in the acid layer. *(The test proves the presence of thiophene and distinguishes phethenylate sodium from diphenylhydantoin sodium.)*

Dissolve about 0.5 gm. of phethenylate sodium in 10 ml. of water and add 5 ml. of diluted hydrochloric acid: a white precipitate forms. Filter the mixture, wash the precipitate well with cold water and dry it at 105° for 4 hours: the phethenylate formed melts between 251 and 259°.

Purity Tests: Determine the heavy metals content (*U. S. P. XIV*, p. 717), using 0.5 gm. of phethenylate sodium in 25 ml. of water: no more turbidity develops than corresponds to 30 ppm. of lead.

Dry about 1 gm. of phethenylate sodium, accurately weighed, for 24 hours at 105°: the loss in weight is not more than 1.5%.

Assay: (Phethenylate) Dissolve about 0.3 gm. of phethenylate sodium, accurately weighed, in a mixture of 50 ml. of water and 10 ml. of diluted hydrochloric acid. Extract the solution with one 100 ml. portion and four 25 ml. portions of ether. Evaporate the combined ether extracts, dry the residue at 105° for 4 hours, and weigh. Each gram of phethenylate present is equivalent to 1.085 gm. of phethenylate sodium. The amount of phethenylate sodium present is not less than 97.0% nor more than 103.0%.

(Nitrogen) Carry out a Kjeldahl or a semi-micro Kjeldahl determination as directed in *U. S. P. XIV*, p. 740. The amount of nitrogen present is not less than 9.7% nor more than 10.3%, equivalent to not less than 97.0% nor more than 103.0% of phethenylate sodium.

Dosage Forms of Phethenylate Sodium

CAPSULES. *Identity Tests:* Ignite the contents of 2 capsules. The residue obtained responds to tests for sodium in *U. S. P. XIV*, p. 724.

The phethenylate isolated in the assay described later melts between 251 and 259°, and in the test for thiophene, as described in the identity tests in the monograph for Phethenylate Sodium, gives a stable brown-green color in the acid layer after 30 min.

Assay: (Phethenylate) Accurately weigh the contents of 20 capsules and transfer them to a 250 ml. beaker. Place the emptied capsules in another beaker, add sufficient alcohol to cover them completely, and let them stand for 30 min. with frequent stirring. Filter the solution into the beaker containing the contents of the capsules, and wash the capsules and filter well with alcohol. Evaporate the liquid nearly to dryness on a steam bath, and dissolve the residue in 45 ml. of water and 5 ml. of sodium hydroxide T.S. Transfer the solution to a 200 ml. volumetric flask, dilute to the mark with water and mix thoroughly. Filter the mixture through a dry filter paper, discarding the first 25 ml. of filtrate, and transfer an aliquot equivalent to 0.3 gm. of phethenylate sodium to a separatory funnel. Dilute with water to make 50 ml. and add 10 ml. of diluted hydrochloric acid. Extract the solution with one 100 ml. and four 25 ml. portions of ether. Evaporate the combined ether extracts, dry the residue at 105° for 4 hours and weigh. Each gram of phethenylate is equivalent to 1.085 gm. of phethenylate sodium. The amount of phethenylate sodium present is not less than 93.0% nor more than 107.0% of the labeled amount.

Pulvules Thiantoin Sodium: 0.13 gm. and 0.26 gm. Eli Lilly & Company, Indianapolis.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

RALPH E. DE FOREST, M.D., *Secretary.*

MAICO AUDIOMETER, MODEL H-1, ACCEPTED

Manufacturer: The Maico Company, Inc., 21 North Third St., Minneapolis 1.

The Maico Audiometer, Model H-1, is a pure tone audiometer for diagnostic purposes. Unpacked, it measures 23 by 44 by 26 cm. (9 1/16 by 17 1/8 by 10 5/16 in.) and weighs 10.45 kg. (23 lb.). Packed for shipment it measures 36 by 50 by 36 cm. (14 by 19½ by 14 in.) and weighs 16.8 kg. (37 lb.). This shipping weight includes the following accessories: 2 air receiver assemblies, 1 headband, 1 bone conductor assembly, 1 microphone assembly, 1 patient signal assembly, 100 audiogram charts, 1 dust cover, 1 operational manual, and 1 calculator for determining percentage of hearing loss. The foreign shipping weight is 27.7 kg. The device operates on 60 cycle alternating current at 110 to 120 volts but can be had also in forms using 25 cycle current and 220 to 240 volts. It draws 40 watts of power.

Maico Audiometer, Model H-1

Evidence was obtained from an acceptable source that the device was of sound construction, that it performed as represented by the manufacturer, and that it satisfied the published minimum requirements of the Council for the acceptance of pure tone audiometers. The Council on Physical Medicine and Rehabilitation voted to include the Maico Audiometer, Model H-1, in its list of accepted devices.

ZENITH HEARING AID, MODEL "ROYAL," ACCEPTED

Manufacturer: Zenith Radio Corporation, 5801 West Dickens Ave., Chicago 39.

The Zenith Hearing Aid, Model "Royal," is an electrical instrument conventional in shape, size, and general design. The size, excluding clothing clips, is 77 by 59 by 22 mm. The weight without batteries is 107 gm. The batteries add 40 gm., and the cord and receiver weigh an additional 9 gm. The A-battery is a 1.25 volt mercury cell; the B-battery is a 22.5 volt zinc-carbon battery.

Zenith Hearing Aid, Model "Royal"

Evidence from sources acceptable to the Council showed that this instrument was sound in construction and satisfactory in operation, and that it met the published minimum requirements of the Council. The Council on Physical Medicine and Rehabilitation voted to include the Zenith Hearing Aid, Model "Royal," in its list of accepted devices.

TELEX HEARING AID, MODEL 400, ACCEPTED

Manufacturer: Telex, Inc., Telex Park, Minneapolis 1.

The Telex Hearing Aid, Model 400, is an electrical instrument of conventional design and construction except that it is intended for those who need a high acoustic gain for severe losses of hearing. An added feature is a "low drain adjustment" which reduces the drain on the B-battery to above one-half by sacrificing about 2 decibels of maximum power output. The size, excluding switches, clips, etc., is 82 by 59 by 18 mm. The weight without batteries, ear piece, or cord is 110 gm. With batteries the weight is 177 gm.

Evidence from sources acceptable to the Council indicated that this device was of good construction and performed as represented by the manufacturer. The Council on Physical Medicine and Rehabilitation voted to include the Telex Hearing Aid, Model 400, in its list of accepted devices.

RADIOEAR HEARING AID, MODEL 72, ACCEPTED

Manufacturer: E. A. Myers & Sons, 306 Beverly Rd., Mount Lebanon, Pittsburgh 16.

The Radioear Hearing Aid, Model 72, is a conventional electric hearing aid distinguished by especially high acoustic output with low distortion, a magnetic microphone, an inductive pickup ("Phonemaster") for use in telephoning, and certain internal and external arrangements for securing tone control. Without clothing clip it measures 114 by 63 by 27 mm. Without batteries it weighs 162 gm.; with them it weighs 208 gm. The cord and receiver together weigh 11.5 gm., and the bone conduction receiver with headband add 27 gm.

Radioear Hearing Aid, Model 72

Evidence of good construction and satisfactory performance was obtained from sources acceptable to the Council. The Council on Physical Medicine and Rehabilitation voted to include the Radioear Hearing Aid, Model 72, in its list of accepted devices.

MILLER ELECTRO-SCALPEL, MODEL 10V, ACCEPTED

Manufacturer: Miller Surgical Company, 2449 North Pulaski Rd., Chicago 39.

The Miller Electro-Scalpel, Model 10V, is a generator of high frequency electromagnetic radiation (frequency 3000 kilocycles, corresponding to a wavelength of 100 meters) designed for use in electro-cutting and electro-coagulation in the office. The firm states that "no claim is made that this unit will stop all bleeders."

The device, unpacked, measures 24 (height) by 29 by 22 cm. (9½ by 11⅜ by 8¾ in.) and weighs 7 kg. (16½ lb.). Packed for shipment it measures 35.5 by 35.5 by 35.5 cm. (14 by 14 by 14 in.) and weighs 10.4 kg. (23 lb.). The shipping weight includes the following accessories: ground cord and plate, foot-switch and line cord, conization electrode, striping electrode, heavy duty needle, half-inch loop electrode, diamond loop electrode, straight spatula electrode, medium ball electrode, diagnostic cord, and two handles. For operation, the apparatus requires a source of 60 cycle alternating current at 120 volts, and it draws 250 watts of power.

The Council obtained evidence indicating that the apparatus was well constructed and performed satisfactorily in office procedures when used as intended by the manufacturer. The Council on Physical Medicine and Rehabilitation voted to include the Miller Electro-Scalpel, Model 10V, in its list of accepted devices.

AUDIVOX, MODEL SUPER 67, ACCEPTED

Manufacturer: Audivox, Inc., 259 West 14 St., New York 11.

The Audivox, Model Super 67, is a conventional electric hearing aid with magnetic receiver. Excluding the clips and similar projections, the size is 87 by 63 by 22 mm. The weight without batteries, receiver, or cord is 119 gm. With batteries the weight is 166 gm.

Audivox Hearing Aid, Model Super 67

Evidence of satisfactory construction and operation was obtained from sources acceptable to the Council. The Council on Physical Medicine and Rehabilitation voted to include the Audivox, Model Super 67, in its list of accepted devices.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FIFTY-FIRST ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., Francis R. Manlove, M.D., and Anne Tipner

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Introduction

This is the fifty-first annual report on medical education in the United States and Canada compiled by the Council on Medical Education and Hospitals of the American Medical Association. It covers the period from July 1, 1950, to June 30, 1951, and, as has been customary, presents data and statistics compiled from official sources on medical schools, students, graduates and other important topics. Several items in this year's report merit special attention.

The significant and continuing increase in the production of physicians, evident during recent years, continues. The 6,135 physicians graduated during 1950-1951 is the largest number ever graduated from American schools except for 1947, when, with termination of the accelerated program, several schools graduated more than one class. All records for student enrolment were again broken. More than 26,000 students were enrolled in the 79 medical and basic science schools of the United States, representing an increase of 1,088, or 4.1%, over the total reported for last year. The largest freshman class in the history of the approved schools, totalling 7,182 students is reported and estimates indicate that the 1951 freshman class will total about 7,400 students.

Significant progress is being made toward resolving the financial problems of the medical schools. Funds available to the schools during 1951-1952 will total approximately $109,600,000, which represents an increase of more than 36 million dollars in the past four years. In addition to the usual sources of funds, the schools this year are receiving grants from the National Fund for Medical Education and the American Medical Education Foundation. However, serious financial problems remain for a number of schools.

The outbreak of hostilities in Korea, attended by partial mobilization has posed new problems for the medical schools. The Joint Committee on Medical Education in Time of National Emergency, formed in June 1950, has been active in seeking solutions to these problems and has worked closely with many governmental agencies. Among the important activities of the Committee this year were: preparation of recommendations to the National Security Resources Board, publication of a booklet entitled "Suggestions for Supplementing the Medical Curriculum in Time of National Emergency," and testimony in relation to Selective Service and Universal Military Training given before the Senate Armed Services Committee and the National Security Training Commission.

Field work by the Survey of Medical Education, conducted under the joint sponsorship of the Council on Medical Education and Hospitals and the Association of American Medical Colleges, was completed in June, 1951. The Committee for the Survey of Medical Education is now writing its report and hopes to have it ready for distribution by the spring of 1952.

Several trends indicating changes in the composition of the student body in medicine are revealed by the statistics with respect to the percentage of veterans and women entering medical school and by an analysis of the college records of the 1951 freshman class. A marked drop in the number of veterans, a slight reduction in the number of women and a doubling of the number of students with "C" averages in college are reported.

The section of the report dealing with postgraduate education discloses that there was a marked reduction in attendance at postgraduate courses during the past year.

The requirements of the various American Boards in the specialties usually included in this report will be presented this year in the Internship and Residency Number of THE JOURNAL which is scheduled for publication Sept. 29, 1951.

The data published in the Educational Number are obtained from official reports. The Council and THE JOURNAL express their appreciation to the officers of the medical schools, hospitals and other institutions and

agencies whose cordial and valuable cooperation makes possible the compilation and presentation of this body of fundamental information which is consulted each year by many individuals, organizations, and governmental agencies interested in medical education in the United States and Canada.

Medical Education and National Defense

The problem of formulating a sound program for the conduct of medical education during war time has been the subject of studies by the Council on Medical Education and Hospitals and the Association of American Medical Colleges since the end of World War II. The outbreak of hostilities in Korea, with its attendant partial mobilization, posed new problems for the medical schools. To the already insistent demand for an expansion of facilities and faculties, which would increase production of physicians for the civilian population, was added the necessity of supplying adequate medical manpower for the greatly expanded armed forces.

As reported in last year's Educational Number, two days after the beginning of the Korean conflict, the Executive Council of the Association of American Medical Colleges and the Council on Medical Education and Hospitals formed a Joint Committee on Medical Education in Time of National Emergency. This committee represents both organizations in discussions with representatives of government agencies and other groups, on problems in medical education related to the present emergency and other efforts to develop a program of national defense. It also maintains liaison with other professional and educational organizations which are concerned with similar problems. Members of the committee are Drs. Stockton Kimball, Chairman, Joseph C. Hinsey, A. C. Bachmeyer, Dean F. Smiley, Mr. John Stalnaker, George P. Berry, Herman G. Weiskotten, Harvey B. Stone, Victor Johnson, Francis R. Manlove, and Donald G. Anderson, Secretary. The liaison members are Drs. David Ruhe, Harold S. Diehl, B. R. Kirklin, and Mr. C. Joseph Stetler. Valuable advice and assistance are being given the committee by consultants assigned to it by the Armed Services, the Public Health Service, the Office of Defense Mobilization, the Selective Service System, and the Veterans Administration.

Four major actions of the Committee during the past year are of special importance.

On Nov. 1, 1950, the committee submitted a statement to the National Security Resources Board outlining certain recommendations which would aid in maintaining an adequate production of well qualified physicians during partial mobilization. It was recommended that the premedical curriculum be not less than three academic years in length, that the medical course consist of four 12 month years and that the accelerated program, which proved so unsatisfactory during World War II, be avoided.

In order to maintain an adequate supply of physicians and allied specialists, the Committee recommended that preprofessional and professional students be deferred until completion of their training. Such men would then become available to the armed forces and other government services which require their special skills. Medical schools should retain full power to select their students and should accept as many as can be accommodated without impairing the quality of training.

All medical graduates should have 12 months or more of internship or of graduate or postgraduate study and an active program of resident training should be maintained. It was recommended that to replenish and expand medical faculties, adequate provision be made for training those specialists in medicine and the basic sciences who are needed for teaching and research.

It was also suggested that the medical curriculum be revised to give proper emphasis to subjects of importance to military medicine and other fields vital to national defense. To facilitate this the Joint Committee appointed a subcommittee to study the curriculum and make recommendations. This subcommittee consisted of Drs. Stanley W. Olson, Gaylord W. Anderson, G. M. Dack, Roy R. Grinker, Roger A. Harvey, Andrew C. Ivy, H. Worley Kendell, Franklin C. McLean, John P. Marbarger, and Charles B. Puestow, and the following consultants from government services: Lt. Col. Louis B. Arnoldi, United States Air Force, Dr. W. Palmer Dearing, United States Public Health Service, Capt. R. H. Fletcher, United States Navy, and Col. Floyd L. Wergeland, United States Army.

On Feb. 10, 1951, the subcommittee's report entitled: "Suggestions for Supplementing the Medical Curriculum in Time of National Emergency" was presented to the Joint Committee and shortly thereafter sent to each medical school. The report outlines the subject matter to which the student should be introduced to provide him with a sound foundation for dealing with problems of civil defense and military medicine. The subcommittee pointed out that most of this material can be satisfactorily covered by using examples drawn from military medicine and civilian disaster to illustrate scientific principles currently presented in the medical course. It should, therefore, be possible to integrate this material into the present curriculum and thus avoid giving it in separate courses.

On Jan. 30, 1951, representatives of the Council and the Association of American Medical Colleges appeared before the subcommittee of the Senate Armed Services Committee in Washington to discuss the medical aspects of pending legislation for universal military training and service. The Joint Committee's representatives emphasized the need for maintaining a continuing flow of students through the nation's institutions of higher learning to provide the specialized personnel essential for national defense and endorsed the program for the deferment of college students of high general competence as advocated by the Six Scientific Advisory Committees to the Selective Service System. Under this program a pool of college students would be selected for continued training on the basis of their educational aptitude as determined by scores made on a general classification test and their previous academic records. The Joint Committee expressed its approval of that section of the Senate bill which provided for competitive scholarships to be awarded on the basis of competence and need. It was emphasized that students deferred from training and service should not be exempted from such training and service. It was therefore recommended that this pe-

riod of liability for training and service be extended by a period equal to their educational deferment and that they should ultimately serve the government in the special capacities for which they had been trained.

On Aug. 17, 1951, the Joint Committee appeared before the National Security Training Commission and presented essentially the same views that were expressed at the Senate hearings.

The following sections summarize the policies of the Selective Service System and the Armed Forces, in effect at the time this report was prepared, which bear directly on the personnel involved in medical education.

SELECTIVE SERVICE SYSTEM

Responsibility for the classification of registrants rests with the Selective Service Local Boards. If an individual or his employer (cf. college, medical school or hospital) has requested his deferment and he has been classified as available for military service, then the individual or his employer may, within 10 days of the mailing of the classification notice, file an appeal. Should the appeal board sustain the classification, the registrant or his employer may, if there is a dissenting vote in the appeal board, file a written request with the local board to have the decision appealed to the President. If there is no dissenting vote, the State or National Director of Selective Service may appeal the case to the President.

Premedical Students.—Selective Service System Form 103 may now be used only for identifying those premedical students who have been definitely accepted for admission to medical school and for medical students who are continuing in medical school. Premedical students who have not been accepted for admission to medical school and who are therefore not eligible for identification on SSS Form 103 are classed with all other college students and may seek deferment under the general provisions for student deferment.

In selecting college students for deferment, the Selective Service Local Boards may, at their own discretion, be guided by the score made by the student on the general classification test administered for the Selective Service System by the Educational Testing Service or by his previous record of academic performance. At present a score of 70 or more on the classification test is considered as evidence of ability or promise sufficient to justify an individual's deferment for further education.

In order to be eligible for deferment on the basis of class standing, a student must have maintained the following standing among the male members of his class: freshman year, upper one-half; sophomore year, upper two-thirds; junior year, upper three-fourths.

A graduate student, other than students of the healing arts who at present are covered separately by Local Board Memorandum No. 7, may be deferred if he has been accepted for the next class commencing as a candidate for a graduate degree and if in his last academic year as an undergraduate he stood among the upper one-half of the male members of his class or if he has scored 75 or better on the classification test.

Medical Students.—Medical students in good standing are eligible for deferment under the provisions of Local Board Memorandum No. 7 and should be so identified by a SSS Form 103. This form should be filled out by the medical school for each student enrolled or definitely accepted for admission and be sent directly to the student's Local Board. Copies are no longer to be sent to the National Headquarters of the Selective Service System. Deferment may not be for longer than one year at a time but may be renewed and a new Form 103 must be filed, by the school, for each student each year. The local boards have been advised, when considering students for deferment, to accept SSS Form 103 as evidence in support of their claim for occupational deferment.

In October, 1950, Public Law 779, which provides for the registration, classification, and induction of certain medical, dental, and allied specialists, became effective. All medical, dental, and allied specialists who had not yet reached the age of 50 at the time of registration were required to register and thereby became available for military service. Registrants were divided into four categories signifying the order of induction:

The first priority were those who had had ASTP or V-12 service or had been deferred by the Selective Service System prior to March 31, 1947, for the purpose of pursuing a course of instruction in their professions, and who had not had more than 90 days of service subsequent to the completion of, or release from, the educational program. In Priority 2 were to be registered those who had participated in these educational programs but had had more than 90 days but not 21 months of service subsequent to the completion of, or release from, the educational program. In Priority 3 would be registered those who had had no service at all since Sept. 16, 1940, and in Priority 4 those who did not come under Priorities 1 or 2, and who served subsequent to Sept. 16, 1940. The Act provided that such special registrants would be selected for induction first from those registered in Priority 1 and that each priority in turn would be exhausted of available men before the next priority could be used.

Men in Priorities 1 and 2 were required to register on Oct. 16, 1950; those in Priorities 3 and 4 on Jan. 15, 1951.

The law states that the President may provide for the deferment of any person whose deferment is equitable and in the national interest. He also is directed to provide for the annual deferment from training and service of premedical, predental and allied preprofessional students in numbers equal to those at present in attendance at colleges and universities.

The President is also directed to establish a National Advisory Committee to advise the Selective Service System and aid State and local advisory boards in selecting the needed, medical, dental, and allied personnel.

Up to the present time, inductions have been limited to Priority 1.

First Year Interns.—The Selective Service System has announced that it will not induct a man under Public Law 779 until he has had an opportunity to complete one year of internship training.

Residents and Second-Year Interns.—No statement of policy has been issued by the National Headquarters of the Selective Service System with respect to residents or second-year interns.

The National Advisory Committee to the Selective Service System has indicated that almost all physicians in Priority 1 will be needed by the armed forces and has advised that they should apply for commissions before completion of their internships. A few persons in these categories may be deferred for teaching, research, or public health service or because they are rendering essential service in isolated communities.

The only persons in this group who can justifiably be recommended for deferment are those who are accepted for training in the scarcity specialties and whose services are required to meet essential needs of medical and dental schools or hospital services. The specialties in which critical shortages exist are anesthesiology, physical medicine and rehabilitation, psychiatry, radiology, neurology, pathology, public health, orthopedic surgery, oral surgery, and the basic medical sciences. Those few persons in these groups for whom deferment is necessary may be put in Class II-A on recommendation of the advisory groups.

Persons in Priority 2, although not obligated for immediate service, should apply for commissions on completion of internships and residencies.

Faculty Members.—A majority of the faculty members of medical schools are under age 50 and therefore are required to register with the Selective Service System as required under Public Law 779. No policy has been announced by Selective Service on the granting of deferment to faculty members.

However, the National Advisory Committee has recommended that, as a general policy, essential members of medical, dental and veterinary medical faculties be held in their teaching positions rather than released for military service. This recommendation applies especially to men in the basic science departments and includes persons in Priorities 1 and 2. This policy is not a blanket recommendation for exemption from military service for all teachers. Part-time teachers who devote only a small part of their time to teaching, and certain of the younger, full-time teachers in Priorities 1 and 2 will be expected to enter the military services.

ARMED FORCES

At the present time a considerable number of premedical students, medical students, interns, residents and faculty are members of the reserve forces of the Army, Navy, Air Force and Marine Corps or of National Guard units. Among premedical and medical students, a large number are enrolled as reserves in branches other than the medical departments. On Aug. 1, 1950, the Secretary of Defense announced a policy on delay in call to active duty for members of all civilian components of the Armed Forces possessing critical occupational skills. This statement called attention to the fact that it is a basic function of the civilian components of the Armed Forces to be available for military service in time of emergency in keeping with the traditional policy of our nation to have a relatively small military force in being, supported by reserves and the National Guard. It is recognized, however, that in an emergency, the national interest may dictate that the ordering to active duty of some reservists be delayed temporarily. The statement goes on to establish the basic criteria on which requests for delay in call to active duty will be considered and evaluated. Under these criteria, provision is made for delays in call-up of premedical students who have been definitely accepted for admission to medical schools, medical students, interns and essential residents and faculty members who are in the reserves. The statement makes clear that delays in call to active duty will be made only on an individual basis and that they shall not be considered as a means of exempting persons indefinitely from military service.

Each of the military departments is responsible for implementing these policies with respect to its own reserves and is issuing its own regulations. These regulations are being reported from time to time in THE JOURNAL. All the services have emphasized that requests for delay in call-up should not be submitted until orders to report for active duty have actually been received. While each of the military departments has estabished an appeal board at the secretarial level which will reconsider individual cases in which the individual or his employer has additional facts or adequate reason to believe that an error was made by the first board, it is emphasized that unless delay in call-up orders are received prior to the reporting date, the person concerned must comply with his original orders.

The Department of Defense announced in December, 1950, that, before a medical or dental reserve officer is called to active duty his name is to be sent to the Department of Defense which will request advice from the Armed Forces Medical Policy Council, Office of the Secretary of Defense, the Health Resources Advisory Committee of the Office of Defense Mobilization and the Advisory Committees to the Selective Service System. The Military Departments will be guided by the information thus obtained in issuing orders for call to active duty. This policy does not apply to organized reservists who have certified their availability for immediate call to duty. Where an individual or his employer believes he should not be called to duty the case may be appealed to the Secretary of Defense.

The National Fund for Medical Education and the American Medical Education Foundation

In the last two Educational Numbers reference has been made to the joint activities of several groups in exploring the possibility of establishing an organization to raise funds on a national scale from voluntary sources for the support of the medical schools. In May, 1951, a public announcement was made of the establishment of the National Fund for Medical Education.[1] This important new organization is sponsored by outstanding leaders in public affairs, business, industry, agriculture, labor, and higher education and by the American Medical Association and the Association of American Medical Colleges. Its board of 66 distinguished trustees, drawn from all parts of the country, is headed by former President Herbert Hoover, as honorary chairman.

The objective of the Fund is to raise annually from voluntary sources substantial sums to aid in the support

1. The National Fund for Medical Education and the American Medical Education Foundation, editorial, J. A. M. A. **146**: 258-259 (May 19) 1951.

of the nation's medical schools. The Fund is concentrating on securing contributions from corporations and organized groups, which have to a large extent replaced individuals as the great potential sources of philanthropy.

Earlier this year the American Medical Association sponsored the establishment of the American Medical Education Foundation as an instrument whereby individual physicians and state and county medical societies could make their contributions. At the annual meeting of the sponsoring groups at which the announcement of the National Fund was made, it was also announced that the contributions received by the American Medical Education Foundation would be distributed to the medical schools through the National Fund.

The National Fund has set a goal of 5 million dollars to be raised during 1951. The American Medical Education Foundation has agreed to raise one million of this amount from the medical profession.

By July, 1951, the combined efforts of the Fund and the Foundation had raised a sufficient sum to make possible the awarding of initial grants of $15,000 to each of the 72 four-year medical schools and of $7,500 to each of the seven schools of the basic medical sciences in the United States. As more funds are raised, additional grants to the schools will be made later in the year.

While the initial grants may appear small, for many schools the grant will constitute the largest unrestricted sum that they will have available during the coming year. Being unrestricted, the grants may be used by each school to support those activities that most urgently need additional funds. Thus the real value of these grants to a school's educational program will be considerably greater than the sums involved might suggest.

A unique and important feature of the operation of both the National Fund and the American Medical Education Foundation is that no portion of any contribution is used for administrative or operational expenses. Every dollar contributed is distributed to the medical schools. The overhead expenses of the National Fund are being met by special grants from a group of philanthropic foundations and those of the American Medical Education Foundation by the American Medical Association.

In the section of this report on the financial support of medical schools evidence is presented to indicate that the gap between the funds available to the medical schools and their needs is being narrowed. It may confidently be expected that the efforts of the Fund and the Foundation in the years immediately ahead will be instrumental in further reducing what remains of this gap.

Survey of Medical Education

The survey of medical education which is being conducted by the Committee for the Survey of Medical Education under the sponsorship of the Council and the Association of American Medical Colleges ended its second year of field work in the spring of 1951. During the two-year period 41 schools were visited.

At the completion of this phase of the study the Committee, after carefully weighing all aspects of the problem decided that it would not be feasible to visit all medical schools as had been planned when the survey was initiated. This decision was based on the recognition that the partial mobilization necessitated by the Korean conflict had resulted in increasing demands upon the medical schools from other sources and on the recognition that the schools individually and collectively are faced with urgent decisions on a number of fundamental, long term educational policies. It was the opinion of the committee that it could render more service to the medical schools and the public by preparing an early report of its findings to date than by continuing its field work for another one or two years. The Committee, therefore, decided to discontinue visits to the medical schools after June 1, 1951 and to address its full energy to the preparation of a report by the earliest possible date. It is now hoped that the report will be published and ready for distribution by the spring of 1952.

Early in 1951 the Committee recognized the possibility that it might not be feasible to visit all medical schools. The schedule of schools selected for study was, therefore, adjusted to give an adequate cross section of the medical schools of the United States. Since the purpose of the survey was to study problems that are basic to all medical schools rather than the peculiar problems of individual schools and since a representative cross section of schools has been studied, it is the committee's belief that the value of its report will not be materially affected by the lack of opportunity to visit all schools.

The Subcommittee on Preprofessional Education, under the chairmanship of Dr. Aura E. Severinghaus of Columbia University, continues to work in coordination with the program of the Survey Committee. During the past year the subcommittee made an intensive study of preprofessional education which included visits to approximately 100 colleges and universities which offer preprofessional training. In November, 1950, this committee sponsored a three day conference at which a group of leaders from the liberal arts colleges met with the Subcommittee on Preprofessional Education and the Survey Committee for the purpose of discussing the principles and problems of preprofessional education. The points of view and opinions expressed in this conference were summarized and utilized by the subcommittee in orienting its study of preprofessional education in the liberal arts colleges.

A larger conference is being planned for the spring of 1952 to which representatives of the liberal arts colleges and medical schools will be invited for the purpose of discussing the final report of the subcommittee.

Approved Medical Schools

The 72 medical schools in the United States which are approved by the Council on Medical Education and Hospitals are listed in Table 1, the 10 approved Canadian medical schools in Table 2, and the eight approved schools of the basic medical sciences in Table 3.

The only change in this list since the publication of the 1950 Educational Number has been the addition of the University of Ottawa Faculty of Medicine to the list of approved Canadian medical schools. The University of Ottawa offers a six year program of instruction. It admitted its first students in the fall of 1945 and graduated its first class in May, 1951. In accordance with the

TABLE 1.—*Approved Medical Schools in the United States*

	Name and Location of School	1952 Premedical Requirement by Years	Students by Classes, 1950-1951						Graduates July 1, 1950 to June 30, 1951	Executive Officer	
			Freshman	Sophomore	Junior	Senior	Required Intern Year	Totals†			
	ALABAMA										
1	Medical College of Alabama, Birmingham	3	56	48	51	52	..	207	52	James J. Durrett, M.D., Dean	1
	ARKANSAS										
2	University of Arkansas School of Medicine, Little Rock	3	90	89	79	82	..	340	82	Hayden C. Nicholson, M.D Dean	2
	CALIFORNIA										
3	University of California School of Medicine, San Francisco	3	72	72	72	71	..	287	71	Francis Scott Smyth, M.D., Dean	3
4	College of Medical Evangelists, Loma Linda-Los Angeles	3	97	96	100	81	81	374	81	Walter E. Macpherson, M.D., President, Los Angeles Harold Shryock, M.D., Dean, Loma Linda	4
5	University of Southern California School of Medicine, Los Angeles	3	69	68	69	66	67	272	67	Burrell O. Raulston, M.D., Dean	5
6	Stanford University School of Medicine, Stanford University-San Francisco	3	62	61	62	56	58	241	58	Loren R. Chandler, M.D., Dean	6
	COLORADO										
7	University of Colorado School of Medicine, Denver	3	84	72	74	71	..	301	69	Robert C. Lewis, Ph.D., Dean	7
	CONNECTICUT										
8	Yale University School of Medicine, New Haven	3	60	70	67	59	..	202	58	C. N. Hugh Long, M.D., Dean	8
	DISTRICT OF COLUMBIA										
9	Georgetown University School of Medicine, Washington	Degree*	122	99	104	103	..	428	103	Rev. Paul A. McNally, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	3	91	88	86	73	..	338	72	Walter A. Bloedorn, M.D., Dean	10
11	Howard University College of Medicine, Washington	4	75	73	73	67	..	288	66	Joseph L. Johnson, M.D., Dean	11
	GEORGIA										
12	Medical College of Georgia, Augusta	3	79	79	77	73	..	308	74	G. Lombard Kelly, M.D., President	12
13	Emory University School of Medicine, Atlanta	3	72	75	68	66	..	281	66	Hugh Wood, M.D., Dean	13
	ILLINOIS										
14	Chicago Medical School	Degree	72	73	65	63	58	273	58	John J. Sheinin, M.D., President; F. J. Mullin, Ph.D., Dean of Faculty	14
15	Northwestern University Medical School, Chicago	3	130	124	136	134	143	524	279‡	Richard H. Young, M.D., Dean	15
16	Stritch School of Medicine of Loyola University, Chicago	3	92	85	85	81	..	343	79	John F. Sheehan, M.D., Acting Dean	16
17	University of Chicago, The School of Medicine	3	70	73	66	62	..	277	62	Lowell T. Coggeshall, M.D., Dean, Division of Biological Sciences; Joseph J. Ceithaml, Ph.D., Dean of Students	17
18	University of Illinois College of Medicine, Chicago	3	169	164	170	162	..	665	163	Stanley W. Olson, M.D., Dean	18
	INDIANA										
19	Indiana University School of Medicine, Bloomington-Indianapolis	3	151	146	139	106	..	542	106	John D. Van Nuys, M.D., Dean, Indianapolis	19
	IOWA										
20	State University of Iowa College of Medicine, Iowa City	3	121	94	85	95	..	395	86	Willis M. Fowler, M.D., Chairman, Exec. Committee	20
	KANSAS										
21	University of Kansas School of Medicine, Lawrence-Kansas City	3	105	96	82	84	..	367	84	Edward H. Hashinger, M.D., Acting Dean	21
	KENTUCKY										
22	University of Louisville School of Medicine, Louisville	3	96	87	96	93	..	372	93	J. Murray Kinsman, M.D., Dean	22
	LOUISIANA										
23	Louisiana State University School of Medicine, New Orleans	3	126	106	98	97	..	427	97	William W. Frye, M.D., Dean	23
24	Tulane University of Louisiana School of Medicine, New Orleans	3	130	124	131	134	..	519	131	Maxwell E. Lapham, M.D., Dean	24
	MARYLAND										
25	Johns Hopkins University School of Medicine, Baltimore	Degree	78	74	76	76	..	304	76	Alan M. Chesney, M.D., Dean	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	3	100	92	98	96	..	386	96	H. Boyd Wylie, M.D., Dean	26
	MASSACHUSETTS										
27	Boston University School of Medicine, Boston	3	73	70	70	57	..	270	59	James M. Faulkner, M.D., Dean	27
28	Harvard Medical School, Boston	3	113	107	141	148	..	509	145	George Packer Berry, M.D., Dean	28
29	Tufts College Medical School, Boston	Degree	112	100	99	96	..	407	95	Dwight O'Hara, M.D., Dean	29
	MICHIGAN										
30	University of Michigan Medical School, Ann Arbor	3	165	136	129	114	..	544	113	A. C. Furstenberg, M.D., Dean	30
31	Wayne University College of Medicine, Detroit	3	68	65	63	62	..	258	62	Gordon H. Scott, Ph.D., Dean	31
	MINNESOTA										
32	University of Minnesota Medical School, Minneapolis	3	128	117	120	113	94	478	94	Harold S. Diehl, M.D., Dean of Medical Sciences	32

	MISSOURI										
33	**St. Louis University School of Medicine, St. Louis**	3	129	119	117	110	..	475	110	Melvin A. Casberg, M.D., Dean	33
34	**Washington University School of Medicine, St. Louis**	3	88	86	102	101	..	377	100	Robert A. Moore, M.D., Dean	34
	NEBRASKA										
35	**Creighton University School of Medicine, Omaha**	3	75	75	69	74	..	293	74	F. G. Gillick, M.D., Dean	35
36	**University of Nebraska College of Medicine, Omaha**	3	88	81	85	84	..	338	82	Harold C. Lueth, M.D., Dean	36
	NEW YORK										
37	**Albany Medical College, Albany**	3	55	50	49	39	..	193	39	James Allan Campbell, M.D., Dean	37
38	**State University of New York, College of Medicine at New York City, Brooklyn**	3	149	146	103	96	..	494	96	Jean A. Curran, M.D., Dean	38
39	**University of Buffalo School of Medicine, Buffalo**	4	74	64	65	64	..	267	64	Stockton Kimball, M.D., Dean	39
40	**Columbia University College of Physicians and Surgeons, New York**	3	120	120	106	111	..	457	109	Willard C. Rappleye, M.D., Dean	40
41	**Cornell University Medical College, New York**	3 and Degree	81	83	84	87	..	335	87	Joseph C. Hinsey, Ph.D., Dean	41
42	**New York Medical College, Flower and Fifth Avenue Hospitals, New York**	Degree	129	126	113	113	..	481	112	J. A. W. Hetrick, M.D., President and Dean	42
43	**New York University College of Medicine, New York**	3	125	127	116	120	..	488	119	Currier McEwen, M.D., Dean	43
44	**University of Rochester School of Medicine and Dentistry**	3	70	71	73	66	..	280	66	George H. Whipple, M.D., Dean	44
45	**State University of New York at Syracuse College of Medicine, Syracuse**	3	77	64	44	48	..	233	48	William R. Willard, M.D., Dean	45
	NORTH CAROLINA										
46	**Duke University School of Medicine, Durham**	3	81	76	78	76	..	311	76	Wilburt C. Davison, M.D., Dean	46
47	**Bowman Gray School of Medicine of Wake Forest College, Winston-Salem**	3	53	49	59	61	..	222	61	C. C. Carpenter, M.D., Dean	47
	OHIO										
48	**University of Cincinnati College of Medicine, Cincinnati**	3	90	88	87	85	..	350	84	Stanley Dorst, M.D., Dean	48
49	**Western Reserve University School of Medicine, Cleveland**	3	81	82	85	76	..	324	76	Joseph T. Wearn, M.D., Dean	49
50	**Ohio State University College of Medicine, Columbus**	3	150	87	84	75	..	396	76	Charles A. Doan, M.D., Dean	50
	OKLAHOMA										
51	**University of Oklahoma School of Medicine, Oklahoma City**	3	80	80	55	65	..	280	65	Mark R. Everett, Ph.D., Dean	51
	OREGON										
52	**University of Oregon Medical School, Portland**	3	73	71	74	73	..	291	71	D. W. E. Baird, M.D., Dean	52
	PENNSYLVANIA										
53	**Hahnemann Medical College and Hospital of Philadelphia**	3	105	85	80	77	..	347	77	Charles L. Brown, M.D., Dean	53
54	**Jefferson Medical College of Philadelphia**	3	168	159	161	161	..	649	161	George Allen Bennett, M.D., Dean	54
55	**Temple University School of Medicine, Philadelphia**	3	135	118	128	123	..	504	122	William N. Parkinson, M.D., Dean	55
56	**University of Pennsylvania School of Medicine, Philadelphia**	3	125	123	126	130	..	504	129	John McK. Mitchell, M.D., Dean	56
57	**Woman's Medical College of Pennsylvania, Philadelphia**	3	50	49	47	40	..	186	39	Marion Fay, Ph.D., Dean	57
58	**University of Pittsburgh School of Medicine, Pittsburgh**	3	101	93	91	81	..	366	80	William S. McElroy, M.D., Dean	58
	SOUTH CAROLINA										
59	**Medical College of the State of South Carolina, Charleston**	3	62	57	57	57	..	233	57	Kenneth M. Lynch, M.D., President; John T. Cuttino, M.D., Dean	59
	TENNESSEE										
60	**University of Tennessee College of Medicine, Memphis**	2	146	132	155	154	..	587	150	O. W. Hyman, Ph.D., Dean	60
61	**Meharry Medical College, Nashville**	2	65	63	61	56	..	245	56	Robert A. Lambert, M.D., Chairman, Interim Committee; Michael J. Bent, M.D., Dean	61
62	**Vanderbilt University School of Medicine, Nashville**	3	52	52	51	50	..	205	54	John B. Youmans, M.D., Dean	62
	TEXAS										
63	**Southwestern Medical School of the University of Texas, Dallas**	3	103	98	75	66	..	342	65	Executive officer: James Pinckney Hart, Chancellor, University of Texas	63
64	**University of Texas School of Medicine, Galveston**	3 and Degree	163	146	90	96	..	495	96	Chauncey D. Leake, Ph.D., Vice-Pres.; D. Bailey Calvin, Ph.D., Dean of Students and Curricular Affairs	64
65	**Baylor University College of Medicine, Houston**	3	92	85	87	87	..	351	78	W. H. Moursund, M.D., Dean	65
	UTAH										
66	**University of Utah School of Medicine, Salt Lake City**	3	52	51	50	49	..	202	49	John Z. Bowers, M.D., Dean	66
	VERMONT										
67	**University of Vermont College of Medicine, Burlington**	3	47	43	40	38	..	168	38	William Eustis Brown, M.D., Dean	67
	VIRGINIA										
68	**University of Virginia Department of Medicine, Charlottesville**	3	74	68	75	71	..	288	71	Vernon W. Lippard, M.D., Dean	68
69	**Medical College of Virginia, Richmond**	3	84	81	101	97	..	363	95	John B. Truslow, M.D., Dean	69
	WASHINGTON										
70	**University of Washington School of Medicine, Seattle**	3	75	72	47	48	..	242	48	Edward L. Turner, M.D., Dean	70
	WISCONSIN										
71	**University of Wisconsin Medical School, Madison**	3	85	84	72	71	..	312	71	William S. Middleton, M.D., Dean	71
72	**Marquette University School of Medicine, Milwaukee**	3	101	94	90	87	..	372	87	John S. Hirschboeck, M.D., Dean	72
	Totals	..	6,893	6,421	6,263	6,056	501	25,633	6,135		

* Three years for veterans.

† Intern enrolment not included in total column.

‡ Two classes of graduates. Internship discontinued December 1950.

established policy of the Council, this school was not eligible for approval until a full program of instruction was organized and in operation for all six years of the medical course. While the sixth year class was enrolled in this school, during the spring of 1951, the school was inspected and approved by the Council. Approval is retroactive to include all students who have been enrolled in the school since it opened in September, 1945.

Tables 1, 2, and 3, list the quantitative premedical requirements which each school will require of the class entering in 1952. They also list the enrolment by classes for the academic year 1950-1951, the number of students enrolled in a required internship year, the total student enrolment exclusive of those in required internships and the number of students graduated by each school from July 1, 1950, to June 30, 1951.

For the Canadian schools, enrolments are also given for premedical students enrolled in the medical schools as well as for those in a fifth medical year and in the required intern year.

TABLE 2.—*Approved Medical Schools in Canada*

	Name and Location of School	1952 Premedical Requirement by Years	Students by Classes, 1950-1951: First Premedical Year	Second Premedical Year	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year*	Totals	Graduates July 1, 1950 to June 30, 1951	Executive Officer	
	ALBERTA													
1	University of Alberta Faculty of Medicine, Edmonton	3	..	..	54	50	55	57	..	..	216	57	John W. Scott, M.D., Dean	1
	MANITOBA													
2	University of Manitoba Faculty of Medicine, Winnipeg	3	..	..	72	63	73	86	..	60	294	67	Lennox G. Bell, M.D., Dean	2
	NOVA SCOTIA													
3	Dalhousie University Faculty of Medicine, Halifax	2	..	..	58	55	55	53	..	55	221	55	H. G. Grant, M.D., Dean	3
	ONTARIO													
4	Queen's University Faculty of Medicine, Kingston	1	64	..	60	61	60	52	50	..	347	52	G. Harold Ettinger, M.D., Dean	4
5	University of Ottawa Faculty of Medicine, Ottawa	1	39	..	60	55	44	52	..	45	250	43	A. L. Richard, M.D., Dean	5
6	University of Western Ontario Faculty of Medicine, London	2	..	..	60	60	62	61	..	..	243	61	J. B. Collip, M.D., Dean	6
7	University of Toronto Faculty of Medicine, Toronto	2	149	143	163	157	178	174	..	..	964	174	J. A. McFarlane, M.B., Dean	7
	QUEBEC													
8	McGill University Faculty of Medicine, Montreal	3	..	..	116	109	114	118	..	..	457	116	C. Lyman Duff, M.D., Dean	8
9	University of Montreal Faculty of Medicine, Montreal	Degree	..	..	121	98	94	85	..	94	398	92	Wilbrod Bonin, M.D., Dean	9
10	Laval University Faculty of Medicine, Quebec	Degree	..	..	164	142	109	67	144	..	626	141	Charles Vézina, M.D., Dean	10
	Totals		252	143	928	850	844	805	194	260	4,016	858		

* Intern enrolment not included in total column.

TABLE 3.—*Approved Schools of the Basic Medical Sciences in the United States and Canada*

	Name and Location of School	1952 Premedical Requirement by Years	Students by Classes, 1950-1951: Freshman	Sophomore	Total	Executive Officer	
	UNITED STATES						
	MISSISSIPPI						
1	University of Mississippi School of Medicine, Oxford	3	29 32	29 30	58 62	David Schultz Pankratz, M.D., Dean	1
	MISSOURI						
2	University of Missouri School of Medicine, Columbia	3	45	43	88	Trawick H. Stubbs, M.D., Dean	2
	NEW HAMPSHIRE						
3	Dartmouth Medical School, Hanover	3	24	25	49	Rolf C. Syvertsen, M.D., Dean	3
	NORTH CAROLINA						
4	University of North Carolina School of Medicine, Chapel Hill	3	59	58	117	W. Reece Berryhill, M.D., Dean	4
	NORTH DAKOTA						
5	University of North Dakota School of Medicine, Grand Forks	3	36	29	65	W. F. Potter, M.D., Dean	5
	SOUTH DAKOTA						
6	University of South Dakota School of Medical Sciences, Vermillion	3	33	30	63	Donald Slaughter, M.D., Dean	6
	WEST VIRGINIA						
7	West Virginia University School of Medicine, Morgantown	3	31	25	56	Edward J. Van Liere, M.D., Dean	7
	Totals	..	289	269	558		
	CANADA						
	SASKATCHEWAN						
8	University of Saskatchewan School of Medical Sciences, Saskatoon	2	32	30	62	W. Stewart Lindsay, M.B., Dean	8
	Totals	..	321	299	621		

The name of the dean or executive officer is given for each school. Changes have been made in the executive officers of 14 of the 90 medical and basic science schools in the United States and Canada since the publication of the 1950 Educational Number. The following schools have appointed new executive officers: Alabama, Albany, Chicago Medical School, College of Medical Evangelists, Creighton, Jefferson, Medical Col-

lege of Virginia, Meharry, South Carolina, Syracuse, Kansas, Utah, and Montreal. The deanship at Southwestern is vacant.

Medical School Calendars

Conventional schedules, with students entering in September or October and graduating in May or June, were followed during the 1950-1951 academic year by most schools. Northwestern University, which discontinued the required intern year, graduated two classes. The Universities of Chicago, Minnesota, and Tennessee graduated students each quarter.

The freshman year in most schools began in September or October. At Kansas where the freshman year consists of two semesters and one summer session with vacations and periods of instruction staggered, half the freshmen began their studies in June, 1950, and half in September. Utah admitted freshmen in June, and Tennessee admitted them quarterly. Mississippi admitted two freshman classes: one in July, 1950 and one in January, 1951.

Schedules for the freshman class will be the same in 1951 as in 1950 at all schools except Utah, where the accelerated program has been discontinued. Beginning in 1951, Utah will admit freshmen in September.

Canadian medical schools followed regular schedules during the past year and will continue to do so for the coming year.

TABLE 4.—*Schools, Students*[1] *and Graduates in Class A and Approved Medical Schools*[2] *in the United States, 1910-1951*

Students in the required intern year are not included

	Schools	Students	Graduates
1910	66	12,530	3,165
1915	67	11,314	2,629
1920	70	12,550	2,680
1921	70	13,488	2,811
1922	69	14,625	2,304
1923	70	16,454	2,881
1924	70	16,775	3,343
1925	71	17,462	3,842
1926	71	17,887	3,732
1927	73	18,754	3,798
1928	74	19,794	4,091
1929	75	20,843	4,412
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,799	5,035
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,095	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089
1940	77	21,271	5,097
1941	77	21,379	5,275
1942	77	22,031	5,163
1943	76	22,631	5,223
1944	77	23,529	5,134
1944 (Second Session)	77	24,666	5,169
1945	77	24,028	5,136
1946 (to May 31)	77	23,216	5,826
1947	77	23,900	6,389
1948	77	22,739	5,543
1949	78	23,670	5,094
1950	79	25,103	5,553
1951	79	26,191	6,135

1. Includes figures for schools of the basic medical sciences.
2. Medical schools graded as Class A from 1910-1929; as approved since 1929.

Graduates

The last columns of Tables 1 and 2 give the number of graduates from each medical school in the United States and Canada, respectively, from July 1, 1950, to June 30, 1951. During this period, 6,135 physicians were graduated from medical schools in the United States. This total includes two classes of graduates from Northwestern, which this year discontinued a required year of internship before the degree of doctor of medicine was awarded. This is the largest number of physicians ever graduated from American medical schools in one year except for the year 1947, when, at the conclusion of the wartime accelerated program, several schools graduated more than one class.

Table 4 shows the total number of Class A and approved medical schools in the United States and the total numbers of their students and graduates for each year since 1910. The form of this table continues the practice, inaugurated last year, of separating the statistics for Class A and approved schools from those for Class B and C schools. In Table 5 are shown the statistics for Class B and C schools for the year 1910-1929. The A, B, C, classification of medical schools was discontinued by the Council in 1929, and since that time schools have been classed as approved or unapproved. Since 1929, statistics have been published only for approved schools. The present classification "Approved Medical School" is equivalent to the former Class A. This fact should be borne in mind by those who desire to make comparative studies on the production of physicians.

The schools with the largest number of graduates were: Illinois 163, Jefferson 161, Tennessee 150, and Harvard 145. Northwestern University, as reported above, graduated two classes, a five year class of 143 students and a four year class of 136 students. Only five schools had fewer than 50 graduates: Utah 49, Syracuse 48, Woman's 39, Albany 39, and Vermont 38.

The Canadian schools had 858 graduates. Toronto, with 174, and Laval, with 141, had the largest number of graduates, while Ottawa, with 43, and Queen's, with 52, had the smallest numbers.

Baccalaureate degrees (Table 6) were held by 4,630, or 75.5%, of the 6,135 students graduated from schools in the United States during 1950-1951 and by 509, or 59.3%, of the 858 students graduated by the Canadian schools in the same period.

The estimated number of graduates for 1951-1952, based on enrolments reported for the senior class, is 6,177. The Canadian schools estimate that their graduates will total 806.

TABLE 5.—*Schools, Students*[1] *and Graduates in Class B and Class C Medical Schools in the United States, 1910-1929.*

Students in the required intern year are not included

	Class B			Class C		
	Schools	Students	Graduates	Schools	Students	Graduates
1910	43	6,944	854	22	2,052	421
1915	22	2,668	688	15	900	219
1920	10	731	162	8	798	205
1921	9	832	200	7	553	180
1922	7	852	148	7	663	182
1923	4	522	83	7	456	156
1924	4	583	115	6	370	104
1925	3	554	118	6	184	14
1926	3	582	130	5	371	100
1927	3	564	117	4	344	120
1928	2	371	96	4	380	75
1929	1	35	34	0	0	0

1. Includes figures for schools of the basic medical sciences.

Enrolments

During the past year all records were again broken for total enrolment and for the number of students admitted to approved medical schools in the United States. Total enrolment in the 72 medical and seven basic science schools in the United States during 1950-1951 was 26,191, as compared with 25,103 for the preceding year. This is an increase of 1,088, or 4.1%, in total enrolment. The freshman class, totaling 7,182, is the largest in the history of the approved schools. It is larger by 140, or 2.0%, than last year's freshman class. Enrolment figures for the individual schools are given in Tables 1 and 3. Total enrolments for medical and basic science schools in the United States and Canada are recapitulated in Table 7.

Total enrolment for the Canadian schools, including one basic science school, was 3,489, an increase of 211, or 6.4%, over the preceding year. In addition, there were 395 premedical students and 194 students enrolled in a fifth (not intern) year. These premedical and fifth year students are included in the "total" column of Table 2 but are not included in Table 7.

There were 761 students in the required intern year in the United States and in Canada. The total number of students enrolled in a required intern year in the United States is shown in Table 8 for each academic year since 1930-1931.

In Table 9 the total enrolments in the various classes in the medical and basic science schools in the United States are recorded for each academic session since 1930-1931. It should be noted that prior to 1942-1943 the totals shown in Table 9 are somewhat higher than the sum of the figures for the various classes in a given year. This discrepancy resulted from the inability of certain schools in the earlier years strictly to classify their students into conventional graded classes.

TABLE 6.—*Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1950 to June 30, 1951*

United States	Graduates	Degrees	Per Cent with Degrees
Medical College of Alabama	52	51	98.0
University of Arkansas	82	29	30.5
University of California	71	65	91.6
College of Medical Evangelists	81	48	59.3
University of Southern California	67	45	67.6
Stanford University	58	57	98.3
University of Colorado	69	63	91.3
Yale University (Connecticut)	58	48	82.7
Georgetown University (Dist. of Columbia)	103	80	77.7
George Washington University	72	52	72.2
Howard University	66	61	92.4
Emory University (Georgia)	66	52	78.8
Medical College of Georgia	74	43	58.1
Chicago Medical School (Illinois)	58	58	100.0
Northwestern University	279	262	93.9
Stritch School of Medicine	79	31	39.2
University of Chicago	62	47	75.8
University of Illinois	163	152	93.3
Indiana University	106	99	93.4
State University of Iowa	86	57	65.1
University of Kansas	84	83	98.8
University of Louisville (Kentucky)	93	54	58.1
Louisiana State University	97	50	51.5
Tulane University of Louisiana	131	87	66.4
Johns Hopkins University (Maryland)	76	74	97.5
University of Maryland	96	60	62.5
Boston University (Massachusetts)	59	46	78.0
Harvard Medical School	145	116	80.0
Tufts College Medical School	95	89	93.7
University of Michigan	113	94	83.2
Wayne University	62	35	56.5
University of Minnesota	94	94	100.0
St. Louis University (Missouri)	110	44	40.0
Washington University	100	69	69.0
Creighton University (Nebraska)	74	40	54.1
University of Nebraska	82	72	87.8
Albany Medical College (New York)	39	32	82.1
State University of New York, Brooklyn	96	79	82.3
University of Buffalo	64	32	50.0
Columbia University	109	100	91.7
Cornell University	87	82	94.3
New York Medical College	112	96	85.7
New York University	119	96	80.7
University of Rochester	66	53	80.3
State University of New York, Syracuse	48	44	91.7
Duke University (North Carolina)	76	20	26.3
Bowman Gray School of Medicine	61	52	85.2
University of Cincinnati (Ohio)	84	67	79.8
Western Reserve University	76	70	92.1
Ohio State University	76	67	88.2
University of Oklahoma	65	39	60.0
University of Oregon	71	71	100.0
Hahnemann Medical College (Pennsylvania)	77	65	84.4
Jefferson Medical College	161	114	70.8
Temple University	122	91	74.6
University of Pennsylvania	129	109	84.5
Woman's Medical College	39	34	87.2
University of Pittsburgh	80	67	83.8
Medical College of South Carolina	57	42	73.6
University of Tennessee	150	46	30.7
Meharry Medical College	56	44	78.6
Vanderbilt University	54	54	100.0
Southwestern Medical School (Texas)	65	33	50.8
Baylor University	78	45	57.7
University of Texas	96	40	41.7
University of Utah	49	47	95.9
University of Vermont	38	29	76.3
Medical College of Virginia	95	79	82.2
University of Virginia	71	52	73.2
University of Washington	48	30	62.5
University of Wisconsin	71	71	100.0
Marquette University	87	31	35.6
Totals	6,135	4,630	75.4
Canada			
University of Alberta	57	57	100.0
University of Manitoba	67	17	25.1
Dalhousie University, Nova Scotia	55	22	40.0
Queen's University, Ontario	52	7	13.5
University of Western Ontario	61	15	24.6
University of Ottawa	43	23	53.4
University of Toronto	174	36	20.7
McGill University, Quebec	116	99	85.0
University of Montreal	92	92	100.0
Laval University	141	141	100.0
Totals	858	509	59/3
Totals	6,993	5,139	73.4

TABLE 7.—*Enrolments by Classes in Medical Schools of the United States and Canada, 1950-1951*

Students in the required intern year are not included

	Freshmen	Sophomores	Juniors	Seniors	Total	Total Preceding Session
72 Medical Schools (U. S.)	6,893	6,421	6,263	6,056	25,633	24,547
7 Basic Science Schools (U. S.)	289	269	.....	.....	558	556
Totals (U. S.)	7,182	6,690	6,263	6,056	26,191	25,103
10 Medical Schools (Canada)	928	850	844	805	3,427*	3,217†
1 Basic Science School (Canada)	32	30	.....	.....	62	61
Totals (Canada)	960	880	844	805	3,489*	3,278†
Grand Totals (U. S. and Canada)	8,142	7,570	7,107	6,861	29,680	28,381

* Does not include 395 premedical and 194 fifth year students.
† Does not include 357 premedical and 169 fifth year students.

TABLE 8.—*Students in the Required Intern Year in the United States, 1931-1951*

1930-1931	1,025
1931-1932	1,007
1932-1933	1,106
1933-1934	1,183
1934-1935	1,233
1935-1936	1,213
1936-1937	1,255
1937-1938	1,132
1938-1939	1,152
1939-1940	1,152
1940-1941	1,058
1941-1942	767
1942-1943	639
1943-1944	451
1944 (Second Session)	447
1944-1945	452
1945-1946	488
1946-1947 *	582
1947-1948	447
1948-1949	458
1949-1950	454
1950-1951	501

* Includes additional classes.

In Table 10, the 72 medical schools of the United States are arranged in the order of the size of their student bodies. The median enrolment was 340, and the average was 356.

Responsibilities of Medical Schools for Other Students

The educational responsibilities of a medical school today cannot be properly measured or understood if attention is given only to the number of undergraduate medical students it enrolls. Many medical schools provide instruction in whole or in part for large numbers of other students. Only in recent years has this fact become appreciated, and even now it is not always fully grasped by those who seek to assess the contribution that a medical school makes to a university's total program of education.

In Table 11 are listed by general categories the numbers of students other than regular medical students who received instruction during the last year under the auspices of the medical schools in the United States and Canada. This year specific information was requested for the first time as to the number of dental, pharmacy, nursing, and technical students receiving instruction from medical school faculties. In previous years some schools reported these students under the category of nonmedical students while other schools did not report them at all. Attention was called in earlier reports to the fact that these differences in reporting resulted in totals that were incomplete. It seems likely that no large groups of students have been omitted from this year's report and that the figures indicate with considerable accuracy the total student loads carried by the individual schools.

TABLE 9.—*Students in the Medical and Basic Science Schools in the United States, 1931-1951*

Students in the required intern year are not included.

	Freshmen	Sophomore	Junior	Senior	Total
1930-1931	6,456	5,538	5,080	4,908	21,982
1931-1932	6,200	5,402	4,932	4,885	22,135
1932-1933	6,426	5,479	5,017	4,948	22,466
1933-1934	6,457	5,571	4,988	4,937	22,799
1934-1935	5,356	5,624	5,142	4,905	22,888
1935-1936	6,605	5,458	5,230	5,020	22,564
1936-1937	5,910	5,269	5,140	5,158	22,095
1937-1938	5,791	5,225	4,986	5,036	21,587
1938-1939	5,764	5,160	4,947	4,921	21,302
1939-1940	5,794	5,177	4,921	4,894	21,271
1940-1941	5,837	5,254	4,999	4,849	21,379
1941-1942	6,218	5,406	5,087	4,942	22,031
1942-1943	6,425	5,828	5,278	5,100	22,631
1943-1944	6,561	6,071	5,640	5,257	23,529
1944 (second session)	6,648	6,140	6,084	5,794	24,666
1944-1945	6,523	5,979	5,700	5,826	24,028
1945-1946	6,060	5,750	5,751	5,655	23,216
1946-1947 *	6,564	5,575	5,767	5,994	23,900
1947-1948	6,487	5,758	5,154	5,340	22,739
1948-1949	6,688	6,194	5,702	5,086	23,670
1949-1950	7,042	6,344	6,079	5,638	25,103
1950-1951	7,182	6,690	6,263	6,056	26,191

* Includes additional classes.

For all medical schools in the United States the number of students other than regular undergraduate medical students for whom the schools assumed responsibility totaled 57,262. The total enrolment of undergraduate medical students was 26,191. These figures make it clear that undergraduate medical students constitute less than one-third of the total number of students receiving instruction from the medical schools. It must, of course, be recognized that the additional students in several of the categories reported in Table 11 did not receive full-time instruction comparable to that provided medical students. However, students in several categories including physicians and other graduate students working for advanced degrees in the basic medical sciences, students in technical schools, interns and residents, physicians holding appointment as fellows, and in several schools dental students, did follow full-time courses of instruction provided by the faculties of the medical schools. Students in these categories total 16,820.

TABLE 10.—*Medical Schools of the United States in Order of Size of Total Enrolment, 1950-1951*

University of Illinois	665
Jefferson Medical College	649
University of Tennessee	587
University of Michigan	544
Indiana University	542
Northwestern University	524
Tulane University	519
Harvard Medical School	509
University of Pennsylvania	504
Temple University	504
University of Texas	495
State University of New York, Brooklyn	494
New York University	488
New York Medical College	481
University of Minnesota	478
St. Louis University	475
Columbia University	457
Georgetown University	428
Louisiana State University	427
Tufts College Medical School	407
Ohio State University	396
State University of Iowa	395
University of Maryland	386
Washington University	377
College of Medical Evangelists	374
University of Louisville	372
Marquette University	372
University of Kansas	367
University of Pittsburgh	366
Medical College of Virginia	363
Baylor University	351
University of Cincinnati	350
Hahnemann Medical College of Philadelphia	347
Stritch School of Medicine	343
Southwestern Medical School	342
University of Arkansas	340
George Washington University	338
University of Nebraska	338
Cornell University	335
Western Reserve University	324
University of Wisconsin	312
Duke University	311
Medical College of Virginia	308
Johns Hopkins University	304
University of Colorado	301
Creighton University	293
University of Oregon	291
Howard University	288
University of Virginia	288
University of California	287
Emory University	281
University of Rochester	280
University of Oklahoma	280
University of Chicago	277
Chicago Medical School	273
University of Southern California	272
Boston University	270
University of Buffalo	267
Yale University	262
Wayne University	258
Meharry Medical College	245
University of Washington	242
Stanford University	241
Medical College of State of South Carolina	233
State University of New York, Syracuse	233
Bowman Gray School of Medicine	222
Medical College of Alabama	207
Vanderbilt University	205
University of Utah	202
Albany Medical College	193
Woman's Medical College of Pennsylvania	186
University of Vermont	168
Totals	25,625

Because of the differences in reporting referred to above, it is not possible to compare with exactness the total number of additional students reported for this year with that for last year. However, when the dental, pharmacy, nursing, and technical students are excluded from this year's total, the remaining students, numbering 40,314, exceed by 7,808 last year's total of 32,506 additional students. This would indicate that there was a real

TABLE 11.—*Other Students for Whom Medical Schools Were Responsible, 1950-1951*

School	Part Time or Special Students Working Toward M.D. Degree	Physicians Enrolled for Advanced Degrees	Other Graduate Students Working for Degrees in Basic Medical Sciences	Dental Students Receiving Instruction from Medical School Faculty	Pharmacy Students Receiving Instruction from Medical School Faculty	Nursing Students Receiving Instruction from Medical School Faculty	Students in Technical Schools Receiving Instruction from Medical School Faculty	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Refresher or Continuation Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Holding Appointments as Fellows	Interns for Whose Instruction & Supervision the Medical School was Primarily Responsible	Residents for Whose Instruction & Supervision the Medical School was Primarily Responsible	Totals
Medical College of Alabama	5	0	12	0	0	0	36	1	0	0	4	31	42	131
University of Arkansas	1	0	9	0	0	0	29	0	345	0	0	8	48	440
College of Medical Evangelists (Calif.)	0	0	4	0	0	156	54	0	1	24	4	81	50	374
Stanford University	0	0	1	0	0	91	32	0	200	0	39	50	80	493
University of California	0	0	0	193	195	206	41	233	972	99	4	20	30	1,993
University of Southern California	0	1	89	0	0	0	0	0	220	0	3	75	65	453
University of Colorado	1	208	57	0	0	213	46	0	226	20	4	32	131	938
Yale University (Connecticut)	0	0	116	0	0	0	0	0	339	74	0	40	99	668
George Washington University (D.C.)	0	0	138	0	60	0	8	176	110	0	23	43	84	642
Georgetown University	0	8	12	187	0	51	3	0	0	0	6	9	54	330
Howard University	1	0	0	51	80	31	0	31	0	0	5	20	34	253
Emory University (Georgia)	0	0	15	78	0	241	12	2	112	0	12	36	159	667
Medical College of Georgia	13	0	0	0	0	60	4	0	191	0	0	9	49	326
Chicago Medical School (Illinois)	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Northwestern University	5	53	68	0	0	140	26	1	14	170	0	143	0	620
Stritch School of Medicine	0	6	62	0	0	0	0	0	0	17	0	0	17	102
University of Chicago	0	5	200	0	0	0	0	0	0	0	29	34	103	371
University of Illinois	0	37	81	193	219	86	14	4	66	9	0	21	56	786
Indiana University	1	6	8	220	0	246	73	9	48	81	11	26	98	827
State University of Iowa	0	16	69	52	55	203	69	729	261	38	4	20	124	1,640
University of Kansas	7	16	70	1	70	151	116	1,658	1,179	2	3	18	60	3,351
University of Louisville (Kentucky)	4	0	12	122	0	125	0	24	290	0	12	17	64	670
Louisiana State University	1	0	4	0	0	0	0	0	46	22	1	0	0	74
Tulane University	1	50	30	0	0	150	0	65	195	32	34	34	90	690
Johns Hopkins University (Maryland)	0	0	3	0	0	168	0	18	9	0	74	0	0	272
University of Maryland	0	0	18	0	75	58	0	2	153	0	26	71	42	445
Boston University (Massachusetts)	0	0	44	0	0	275	36	47	157	0	6	0	5	570
Harvard Medical School	0	0	41	28	0	0	0	0	500	86	300	0	0	955
Tufts College Medical School	0	0	12	179	0	0	0	0	132	3	41	0	0	367
University of Michigan	4	0	520	87	118	172	51	326	1,771	0	9	55	66	3,179
Wayne University	2	93	37	140	0	0	24	0	249	15	0	0	0	560
University of Minnesota	2	824	203	256	329	294	0	1,569	1,477	0	0	29	299	5,282
University of Mississippi	0	0	11	0	92	0	0	0	0	0	0	0	0	103
St. Louis University (Missouri)	6	0	0	0	0	0	0	0	105	0	0	8	57	176
University of Missouri	8	0	23	0	0	0	46	226	0	0	0	0	0	303
Washington University	0	0	0	0	0	0	62	33	133	21	57	55	105	466
Creighton University (Nebraska)	7	0	2	79	23	120	0	7	0	0	0	21	12	271
University of Nebraska	1	1	6	0	0	197	13	0	34	0	2	9	47	310
Dartmouth Medical School (New Hampshire)	0	0	0	0	0	96	10	2	2	1	3	11	57	182
Albany Medical College (New York)	2	0	0	0	0	332	0	0	89	0	0	26	35	484
Columbia University	0	4	0	77	0	306	0	14	908	137	15	38	180	1,810
Cornell University	1	3	15	0	0	190	0	0	33	21	52	0	0	315
State Univ. of New York Coll. of Med. at New York City	0	37	0	0	0	0	0	0	39	0	0	0	0	76
New York Medical College	5	17	0	0	0	72	0	0	125	0	3	6	23	251
New York University	1	79	90	150	0	450	0	40	1,417	0	60	68	124	2,479
State University of New York Coll. of Med. at Syracuse	0	0	1	0	0	0	0	0	272	0	12	20	64	369
University of Buffalo	0	0	26	123	60	32	0	15	95	0	0	0	0	351
University of Rochester	0	0	0	0	0	174	0	0	0	0	28	48	103	353
Duke University (North Carolina)	0	0	0	0	0	135	45	10	10	10	14	75	75	374
University of North Carolina	0	0	16	40	51	0	0	163	282	0	2	0	0	554
Bowman Gray School of Medicine	0	0	5	0	0	105	11	0	0	0	0	16	44	181
University of North Dakota	2	0	4	0	0	48	6	13	0	0	0	0	0	73
Ohio State University	1	14	8	177	90	172	275	842	0	0	6	21	71	1,677
University of Cincinnati	0	6	11	0	0	0	0	5	330	0	29	44	110	535
Western Reserve University	1	0	54	175	0	199	17	6	203	42	44	58	69	868
University of Oklahoma	0	1	7	0	0	123	13	0	450	68	5	48	55	770
University of Oregon	1	4	19	4	0	392	0	3	182	0	0	18	64	687
Hahnemann Medical College (Pennsylvania)	0	0	7	0	0	42	0	31	0	0	9	0	0	89
Jefferson Medical College	0	0	27	0	0	0	0	0	0	0	11	9	39	86
Temple University	0	0	0	0	0	300	11	0	68	0	0	0	81	460
University of Pennsylvania	0	0	87	140	0	24	47	0	45	0	86	27	196	652
University of Pittsburgh	2	0	0	0	0	921	0	0	0	122	0	15	121	1,181
Woman's Medical College	0	0	1	0	0	56	0	0	0	0	10	5	9	81
Medical College of South Carolina	0	1	12	0	106	135	13	0	319	5	10	21	32	654
University of South Dakota	5	0	0	0	0	0	5	124	0	2	30	2	1	169
Meharry Medical College (Tennessee)	6	0	8	67	0	10	10	0	0	0	3	10	16	130
University of Tennessee	0	16	36	287	233	128	0	19	0	0	0	0	0	719
Vanderbilt University	0	0	12	0	0	65	0	3	0	0	0	37	62	179
Baylor University (Texas)	0	0	0	0	0	0	0	0	216	0	4	0	0	220
Southwestern Medical College	0	0	0	0	0	73	0	3	15	0	5	0	0	96
University of Texas	1	0	15	60	0	117	30	4	1,160	4	6	24	86	1,507
University of Utah	3	3	159	0	0	146	0	569	89	0	14	13	57	1,053
University of Vermont	0	1	14	0	0	98	20	0	0	0	21	0	0	154
Medical College of Virginia	0	2	11	194	227	159	36	58	959	0	4	41	94	1,776
University of Virginia	0	8	0	0	0	194	0	0	180	0	13	31	72	498
University of Washington School of Medicine	0	2	49	275	240	380	12	2,605	413	21	11	26	27	4,061
West Virginia University	0	0	6	0	66	0	26	0	0	0	0	0	0	98
Marquette University (Wisconsin)	5	39	11	219	0	0	0	0	83	6	10	0	62	435
University of Wisconsin	0	0	23	0	108	87	20	17	144	0	0	13	60	472
Totals	106	1,561	2,720	3,854	2,497	9,195	1,402	9,838	17,654	1,152	1,238	1,786	4,259	57,262
CANADA														
University of Alberta	0	19	21	0	0	0	0	0	192	2	0	0	0	234
University of Manitoba	0	12	0	0	0	350	0	0	54	12	0	66	8	502
Dalhousie University (Nova Scotia)	0	0	0	36	24	19	0	23	190	6	5	55	0	358
Queen's University (Ontario)	0	3	0	0	0	14	0	14	36	4	7	13	4	95
University of Ottawa	2	0	5	0	0	0	0	0	5	0	3	45	5	65
University of Toronto	0	62	41	102	112	25	0	774	105	64	78	0	0	1,423
University of Western Ontario	1	6	43	0	0	51	0	7	0	0	7	0	0	115
Laval University (Quebec)	1	0	0	0	0	0	0	0	0	0	0	0	0	1
McGill University	0	0	0	0	0	0	0	6	0	0	0	0	0	6
University of Montreal	0	0	8	124	0	0	0	0	0	27	0	94	0	253
University of Saskatchewan	0	0	12	0	72	15	50	24	0	0	0	0	0	173
Totals	4	102	180	322	208	474	50	848	582	115	100	273	17	3,225

TABLE 12.—*Distribution by Sex of Medical Students, and Graduates in the United States and Canada 1950-1951*

	Students		Graduates	
United States	Men	Women	Men	Women
Medical College of Alabama	200	7	49	3
University of Arkansas	330	10	80	2
University of California	264	23	63	8
College of Medical Evangelists	347	27	72	9
University of Southern California	259	13	63	4
Stanford University	225	16	54	4
University of Colorado	282	19	62	7
Yale University (Connecticut)	240	22	51	7
Georgetown University (Dist. Columbia)	406	22	98	5
George Washington University	323	15	65	7
Howard University	259	29	56	10
Emory University (Georgia)	275	6	62	4
Medical College of Georgia	294	14	73	1
Chicago Medical School (Illinois)	264	9	56	2
Northwestern University	496	28	265	14
Stritch School of Medicine	333	10	77	2
University of Chicago	257	20	57	5
University of Illinois	627	38	146	17
Indiana University	513	29	102	4
State University of Iowa	376	19	79	7
University of Kansas	351	16	79	5
University of Louisville (Kentucky)	350	22	86	7
Louisiana State University	402	25	90	7
Tulane University of Louisiana	495	24	121	10
Johns Hopkins University (Maryland)	279	25	65	11
University of Maryland	309	17	92	4
Boston University (Massachusetts)	253	17	56	3
Harvard Medical School	478	31	137	8
Tufts College Medical School	380	18	88	7
University of Michigan	511	33	105	8
Wayne University	253	5	61	1
University of Minnesota	454	24	81	3
University of Mississippi	117	3	...	..
University of Missouri	85	3	...	..
St. Louis University	471	4	110	0
Washington University	351	26	92	8
Creighton University (Nebraska)	283	10	69	5
University of Nebraska	319	19	78	4
Dartmouth Med. School (New Hampshire)	49	0	...	..
Albany Medical College (New York)	180	13	36	3
State University of New York, College of Medicine at New York City	460	34	84	12
University of Buffalo	254	13	63	1
Columbia University	407	50	94	15
Cornell University	311	24	76	11
New York Medical College	429	52	92	20
New York University	445	43	104	15
University of Rochester	259	21	60	6
State University of New York at Syracuse College of Medicine	223	10	44	4
University of North Carolina	115	2	...	..
Duke University	295	16	70	6
Bowman Gray School of Medicine	213	9	58	3
University of North Dakota	65	0	...	..
University of Cincinnati (Ohio)	341	9	78	6
Western Reserve University	293	31	67	9
Ohio State University	379	17	73	3
University of Oklahoma	269	11	60	5
University of Oregon	277	14	66	5
Hahnemann Med. College (Pennsylvania)	325	22	71	6
Jefferson Medical College	649	0	161	0
Temple University	466	38	109	13
University of Pennsylvania	484	20	120	9
Woman's Medical College	0	186	0	39
University of Pittsburgh	351	15	78	2
Medical College of South Carolina	229	4	57	0
University of South Dakota	58	5	...	..
University of Tennessee	502	25	144	6
Meharry Medical College	232	13	52	4
Vanderbilt University	201	4	50	4
Southwestern Medical School (Texas)	325	17	60	5
University of Texas	471	24	90	6
Baylor University	334	17	73	5
University of Utah	194	8	48	1
University of Vermont	159	9	35	3
University of Virginia	284	4	71	0
Medical College of Virginia	337	26	89	6
University of Washington	226	16	43	5
West Virginia University	51	5	...	..
University of Wisconsin	289	23	60	11
Marquette University	356	16	81	6
Totals	24,627	1,564	5,607	468
Canada				
University of Alberta	202	14	53	4
University of Manitoba	275	19	63	4
Dalhousie University (Nova Scotia)	210	11	53	2
Queen's University (Ontario)	260*	23*	51	1
University of Ottawa	207†	4†	40	3
University of Western Ontario	228	15	54	7
University of Toronto	614‡	58‡	149	25
McGill University (Quebec)	430	27	109	7
University of Montreal	370	28	86	6
Laval University	617	9	137	4
University of Saskatchewan	66	6	...	..
Totals	3,469	214	795	63
Totals	28,096	1,778	6,402	531

* Excludes 62 men and 2 women premedical students.
† Excludes 37 men and 2 women premedical students.
‡ Excludes 265 men and 27 women premedical students.

increase during the past year in the number of additional students for which the medical schools provided instruction.

In the category of physicians enrolled for advanced degrees, the number increased from 1,125 to 1,561. Other graduate students working for advanced degrees in the basic medical sciences jumped from 2,094 to 2,720. The total number of graduate students in the United States in these two categories was 4,281 which may be compared with the total of 3,219 last year and the highest prewar total of 1,167, for evidence of the continuing increase in the number of persons pursuing graduate study in the medical sciences.

TABLE 13.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,150	5.1	241	4.6
1944	1,176	5.0	239	4.7
1944 (second session)	1,141	4.6	252	4.9
1945	1,352	5.6	262	5.1
1946 (to May 31)	1,868	8.0	242	4.2
1947 *	2,183	9.1	342	5.4
1948	2,159	9.5	392	7.1
1949	2,109	8.9	612	12.1
1950	1,806	7.2	595	10.7
1951	1,564	5.9	468	7.6

* Includes additional classes.

TABLE 14.—*Enrolment by Classes of Veterans and Non-Veterans in the Medical and Basic Science Schools in the United States, 1950-1951*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen	2,852	3,954	6,806	15	361	376	7,182
Sophomores	3,694	2,626	6,320	18	352	370	6,690
Juniors	3,966	1,933	5,899	16	348	364	6,263
Seniors	3,942	1,660	5,602	25	429	454	6,056
Totals	14,454	10,173	24,627	74	1,490	1,564	26,191

The 17,654 physicians enrolled in refresher or continuation courses represented no significant change from the total of 17,930 reported last year. Likewise, the total of 1,152 physicians enrolled in formal basic science courses in preparation for specialty board certification differed only slightly from the total of 1,087 for the previous year. Physicians holding appointments as fellows also increased only slightly from 1,135 to 1,238.

In Canada the total number of additional students during the past year was 3,225. When the categories of students that were reported this year for the first time are excluded, the total is 2,271, a definite increase over the total of 1,420 reported in the previous year.

TABLE 15.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 Dist. of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana
1	Medical College of Alabama	56	..	..	..	..	..	..	..	..	..	..	..	..
2	University of Arkansas School of Medicine	..	..	99	..	..	..	..	..	..	..	..	..	..
3	University of California Medical School	..	2	..	60	1	..	..	..	..	..	..	..	..
4	College of Medical Evangelists	..	..	1	122	5	..	..	..	4	1	3	2	1
5	University of Southern California School of Medicine	..	1	..	64	..	..	..	..	..	..	..	..	..
6	Stanford University School of Medicine	..	..	..	59	..	..	..	..	..	..	..	..	..
7	University of Colorado School of Medicine	..	..	..	..	63	..	..	..	..	..	..	..	..
8	Yale University School of Medicine	..	1	..	5	1	13	1	2	2	..	..	..	..
9	Georgetown University School of Medicine	..	..	..	2	..	7	..	4	..	..	..	2	1
10	George Washington University School of Medicine	12	..	..	9	1	3	..	17	4	..	3	1	..
11	Howard University College of Medicine	12	..	..	1	..	2	..	13	1	..	..	1	1
12	Emory University School of Medicine	7	..	..	..	..	..	..	..	19	38	..	..	..
13	Medical College of Georgia	..	..	..	..	..	..	..	..	..	79	..	..	..
14	Chicago Medical School	..	1	..	4	..	4	..	..	..	..	..	7	1
15	Stritch School of Medicine of Loyola University	1	..	..	6	1	..	..	..	1	..	..	45	1
16	Northwestern University Medical School	..	4	..	9	..	..	..	1	..	1	..	37	4
17	University of Chicago, The School of Medicine	..	..	..	19	..	..	..	..	..	..	1	26	..
18	University of Illinois College of Medicine	..	..	..	..	..	..	..	..	..	..	..	169	..
19	Indiana University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	146
20	State University of Iowa College of Medicine	..	1	..	..	1	..	..	..	..	..	..	3	..
21	University of Kansas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
22	University of Louisville School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	1
23	Louisiana State University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Tulane University of Louisiana School of Medicine	10	..	6	..	..	1	..	..	3	2	..	..	1
25	Johns Hopkins University School of Medicine	4	..	..	3	2	2	2	..	1	2	2	..	..
26	University of Maryland School of Medicine	..	..	..	..	..	1	1	..	1	..	..	1	..
27	Boston University School of Medicine	..	..	..	2	..	3	..	1	..	..	..	..	..
28	Harvard Medical School	1	2	..	5	..	4	..	..	..	1	1	4	..
29	Tufts College Medical School	..	..	..	..	..	8	..	..	..	..	1	1	..
30	University of Michigan Medical School	..	..	..	..	..	..	..	..	..	..	..	1	..
31	Wayne University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
32	University of Minnesota Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..
33	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
34	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
35	St. Louis University School of Medicine	1	1	..	9	..	..	..	..	..	..	..	6	1
36	Washington University School of Medicine	..	..	1	4	2	1	1	..	..	..	2	8	1
37	Creighton University School of Medicine	..	..	..	12	2	..	..	..	..	..	1	..	..
38	University of Nebraska College of Medicine	..	..	..	..	..	..	1	..	..	..	..	..	..
39	Dartmouth Medical School	..	..	1	1	..	1	2	..	..	..	..	2	..
40	Albany Medical College	..	..	..	..	..	1	..	..	..	..	..	..	..
41	State University of New York, College of Medicine at New York City	..	..	..	..	..	1	..	..	..	..	..	..	..
42	University of Buffalo School of Medicine	..	..	..	1	..	1	..	..	..	..	..	1	..
43	Columbia University College of Physicians and Surgeons	1	1	..	3	..	11	..	..	..	..	..	1	1
44	Cornell University Medical College	..	1	..	4	..	3	..	..	1	..	..	2	..
45	New York Medical College, Flower and Fifth Avenue Hospitals	1	..	..	..	1	12	..	1	1	1	..	..	..
46	New York University College of Medicine	..	..	..	..	..	6	..	..	..	..	..	..	1
47	University of Rochester School of Medicine and Dentistry	..	..	..	3	..	2	..	..	1	..	..	1	1
48	State University of New York, College of Medicine at Syracuse	..	..	..	..	..	..	..	..	..	..	..	..	..
49	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
50	Duke University School of Medicine	1	..	..	..	..	..	..	..	12	1	1	..	1
51	Bowman Gray School of Medicine	..	..	..	..	..	..	..	..	3	5	..	..	..
52	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
53	University of Cincinnati College of Medicine	1	..	..	2	..	..	..	..	..	..	..	1	5
54	Western Reserve University School of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	1
55	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
56	University of Oklahoma School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
57	University of Oregon Medical School	..	..	..	3	..	..	..	..	..	..	1	..	..
58	Hahnemann Medical College	..	..	..	1	..	..	1	..	1	..	..	1	..
59	Jefferson Medical College of Philadelphia	1	..	..	..	..	1	3	..	1	..	1	2	..
60	Temple University School of Medicine	2	..	..	1	..	2	1	..	2	..	..	..	1
61	University of Pennsylvania School of Medicine	..	..	..	2	2	2	..	..	1	..	..	..	..
62	Woman's Medical College of Pennsylvania	..	..	..	5	..	3	1	..	1	..	..	1	1
63	University of Pittsburgh School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..
64	Medical College of the State of South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..
65	University of South Dakota School of Medical Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..
66	University of Tennessee College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
67	Meharry Medical College	5	..	2	..	..	1	..	..	8	2	..	3	..
68	Vanderbilt University School of Medicine	11	..	1	..	..	..	..	..	7	2	..	..	..
69	Southwestern Medical School of the University of Texas	..	..	..	..	..	..	..	..	..	..	..	..	..
70	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
71	Baylor University College of Medicine	..	3	..	1	1	..	..	..	..	1	..	..	..
72	University of Utah School of Medicine	..	3	..	..	..	..	..	..	..	..	1	..	..
73	University of Vermont College of Medicine	..	..	..	..	..	8	1	..	..	..	..	..	..
74	University of Virginia Department of Medicine	..	..	..	..	..	..	..	..	1	1	..	..	1
75	Medical College of Virginia	..	..	..	1	..	1	..	1	..	1	..	..	..
76	University of Washington School of Medicine	..	..	..	..	..	..	..	..	..	..	2	..	..
77	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
78	University of Wisconsin Medical School	..	..	..	..	..	..	..	..	1	..	..	..	..
79	Marquette University School of Medicine	1	..	..	2	..	..	..	..	..	..	..	4	3
80	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
81	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
82	Dalhousie University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
83	Queen's University Faculty of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..
84	University of Ottawa Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
85	University of Western Ontario Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
86	University of Toronto Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
87	McGill University Faculty of Medicine	..	..	..	9	..	..	..	..	..	..	1	1	..
88	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
89	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
90	University of Saskatchewan School of Medical Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..
	Totals	168	21	102	318	88	106	15	40	77	138	21	334	175
		1	2	3	4	5	6	7	8	9	10	11	12	13

* Figures are for students in beginning premedical year.
† Figures include two freshman classes.

in the United States and Canada, 1950-1951

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	
Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	90	2
..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	72	3
1	2	..	1	..	..	2	6	1	..	..	1	1	..	..	2	1	2	1	1	3	1	6	..	1	..	1	..	2	..	..	1	7	..	..	..	1	2	11	97	4
..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	69	5
1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	3	..	3	..	3	62	6
..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	..	..	84	7
1	..	1	..	1	1	4	1	1	..	1	..	..	..	..	6	..	9	..	2	3	1	..	3	3	..	..	..	..	1	..	..	1	..	..	..	..	..	1	66	8
..	..	..	..	..	5	16	1	..	..	..	..	..	..	2	22	..	39	..	..	4	..	..	10	4	1	..	..	..	..	..	1	..	1	..	..	..	..	..	122	9
..	..	..	..	1	8	..	..	..	2	1	..	..	..	..	7	..	5	..	1	4	2	..	6	..	..	..	1	..	..	..	2	1	2	6	..	1	..	1	91	10
1	..	..	1	..	..	2	3	1	5	2	..	..	..	..	6	..	20	1	..	..	..	..	3	..	1	..	1	..	..	..	2	..	..	..	..	..	..	5	75	11
..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	2	1	..	..	..	..	1	..	..	..	..	..	72	12
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79	13
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	..	28	..	..	4	..	..	5	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	72	14
2	4	2	..	..	..	1	5	1	..	3	5	2	..	1	2	1	3	1	1	13	2	..	3	..	..	1	2	3	2	..	..	2	..	5	3	1	1	2	92	15
..	1	..	..	..	2	2	..	1	..	..	1	1	..	..	5	..	7	..	1	5	1	..	2	..	..	..	..	..	..	..	..	2	..	1	1	3	..	2	130	16
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76	17
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	169	18
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	151	19
114	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	121	20
..	98	..	..	..	..	..	..	..	..	4	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	105	21
..	..	88	..	..	..	..	..	..	..	..	..	..	..	..	1	..	4	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	96	22
..	..	..	126	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	126	23
..	..	1	58	..	..	1	..	..	15	1	..	..	..	..	..	..	5	1	..	..	4	..	1	..	..	..	2	10	..	..	..	..	..	1	..	3	..	4	130	24
..	..	1	..	..	16	4	3	2	1	1	..	..	..	..	4	..	8	..	1	1	..	..	6	..	1	..	..	3	..	..	2	2	1	2	..	..	..	1	78	25
..	..	..	..	1	73	1	..	..	..	1	..	..	1	..	..	..	1	..	..	4	..	..	5	1	..	..	..	..	1	..	..	1	4	..	..	2	..	..	100	26
..	..	..	..	1	..	42	2	1	..	..	..	..	..	1	1	..	11	..	..	1	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	73	27
..	..	..	..	..	2	20	1	..	2	2	..	..	..	1	8	1	27	1	..	9	..	1	10	1	..	..	..	..	..	..	1	..	2	..	..	..	6	113	28
..	..	..	..	8	..	76	1	..	..	..	..	..	..	4	3	..	1	..	..	..	..	..	..	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	112	29
..	..	..	..	..	..	..	157	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	..	..	165	30
..	..	..	..	..	..	..	68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	68	31
..	..	..	..	..	..	..	1	116	..	..	2	..	..	..	..	..	1	..	3	..	..	..	2	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	128	32
..	..	..	..	..	..	..	..	..	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	61†	33
..	..	..	..	..	..	..	..	..	..	45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	45	34
..	1	3	..	..	..	3	6	6	..	29	2	..	..	1	1	1	6	..	1	23	..	1	6	1	..	1	..	1	..	..	9	1	2	..	5	..	2	129	35
1	..	..	..	..	..	1	2	3	..	35	2	..	..	..	1	1	8	..	..	3	2	..	1	1	..	..	1	..	..	..	..	3	..	..	..	1	..	2	88	36
10	1	..	1	..	..	..	3	..	2	4	20	..	..	..	..	..	..	..	..	..	..	2	..	..	..	4	..	..	..	..	..	5	..	..	3	4	..	1	75	37
..	1	..	..	..	..	..	..	..	..	..	1	82	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	88	38
..	..	..	..	..	..	3	..	..	..	..	..	..	4	1	..	5	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	24	39
..	..	1	..	..	..	2	..	..	..	..	..	..	..	7	..	39	..	..	..	..	..	..	3	1	..	..	..	..	..	..	1	..	..	..	..	..	..	55	40
..	..	..	1	..	..	1	1	..	..	..	..	..	..	11	..	131	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	..	1	149	41
..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	..	53	..	1	..	2	..	..	8	..	..	..	..	..	..	..	1	..	..	..	..	..	1	74	42
1	..	..	1	..	..	1	..	..	..	..	..	..	..	16	..	30	..	..	..	1	..	..	6	1	..	..	1	..	1	..	1	1	..	..	1	..	..	120	43
1	..	..	..	2	..	5	1	..	1	1	..	1	..	26	1	42	2	..	..	7	..	..	6	1	..	..	1	..	1	..	1	..	..	1	..	..	..	81	44
1	..	..	1	2	2	2	1	2	..	1	..	..	..	1	16	..	30	..	..	1	..	..	6	1	..	..	1	..	1	..	1	..	..	..	..	..	..	129	45
..	..	..	..	..	..	3	..	..	..	..	..	..	..	18	..	81	..	..	..	1	..	..	1	5	..	2	..	..	..	..	..	..	..	..	..	1	..	125	46
..	..	..	..	..	..	1	..	..	..	..	..	..	..	13	..	99	..	..	..	1	..	..	3	..	..	..	..	..	..	..	1	..	..	..	1	..	..	70	47
1	..	..	..	4	2	4	..	1	..	..	..	..	..	6	..	29	..	..	..	7	..	..	3	..	..	..	..	..	..	..	1	..	..	1	2	..	1	77	48
..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	69	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	59	49
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	81	50
..	..	1	..	..	2	..	..	..	1	..	..	..	1	..	2	..	2	34	1	..	..	..	..	..	8	..	1	3	1	..	2	1	4	1	..	..	..	53	51
..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	34	..	1	1	..	..	..	..	2	..	..	..	..	..	1	..	1	..	..	..	..	36	52
..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	90	53
..	..	3	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	70	..	..	2	..	..	..	..	..	..	..	1	2	..	..	..	..	1	81	54
..	..	..	..	1	..	3	2	..	..	..	1	1	..	..	2	..	5	..	..	58	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	3	150	55
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	150	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80	56
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	73	57
..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	63	..	..	..	..	..	..	..	..	4	..	..	..	1	..	1	105	58
..	..	..	..	..	..	..	2	..	..	1	..	..	..	2	16	..	2	..	..	1	..	..	75	1	..	..	..	..	..	..	..	..	1	..	2	..	..	168	59
..	..	..	..	..	1	4	..	..	2	..	..	..	..	2	23	..	6	2	..	4	1	..	107	1	..	..	..	..	..	..	1	2	1	1	1	..	..	135	60
..	..	..	..	..	3	1	..	..	..	..	..	..	..	12	..	2	1	..	..	1	1	..	95	..	..	..	..	1	1	..	..	..	..	1	..	5	..	2	125	61
1	1	1	..	..	..	1	..	..	..	1	..	..	..	17	..	6	1	..	..	1	..	..	77	1	1	..	..	2	..	..	4	..	2	1	..	..	..	50	62
2	..	1	..	..	..	..	..	..	..	..	1	..	..	2	..	11	2	..	..	1	..	..	14	..	..	..	..	..	..	..	..	2	1	1	..	..	..	101	63
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62	64
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33	65
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33	..	..	..	..	..	..	..	..	..	..	..	..	146	66
..	..	1	3	..	3	..	2	..	..	1	..	..	..	..	..	..	2	3	..	3	2	..	1	..	4	..	5	3	..	..	8	..	..	1	..	..	2	65	67
..	..	4	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	15	3	..	..	..	..	..	..	..	..	..	52	68
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103	..	..	..	..	..	..	..	..	..	..	103	69
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	163	..	..	..	..	..	..	..	..	..	..	163	70
..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	80	..	..	..	1	..	..	..	..	1	92	71
..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	44	..	..	..	..	..	1	..	1	52	72
..	..	..	..	2	..	9	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	..	1	1	..	..	..	..	..	21	..	..	..	..	..	..	..	47	73
..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	64	..	4	..	..	..	..	..	74	74
..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	72	..	2	..	..	1	..	1	84	75
..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	65	..	..	..	5	1	..	75	76
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	31	77
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	83	..	..	..	..	85	78
..	..	..	..	..	..	2	7	4	..	..	2	..	..	..	3	..	3	..	1	3	..	1	5	..	..	2	..	..	..	..	..	..	54	..	4	..	..	101	79
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54	..	54	80
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	71	1	72	81
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58	82
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	61	..	64*	83
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59	..	60	84
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	60	85
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	148	1	149*	86
..	..	..	..	..	..	4	..	..	..	..	1	..	..	..	1	1	8	..	..	3	..	2	..	1	..	..	..	1	..	..	4	..	..	..	1	69	9	116	87
..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	114	3	121	88
..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	158	..	164	89
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	32	90
139	110	114	193	23	121	227	280	146	95	133	31	109	4	20	272	16	835	145	51	405	102	75	584	38	80	47	180	380	54	22	166	117	62	168	23	56	888	78	8,132	
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

Distribution of Students by Sex

Classification by sex of all students enrolled in the medical and basic science schools of the United States and Canada for the academic year 1950-1951 is given in Table 12. Graduates of each school are similarly classified in the same table.

Table 13 shows the number of women students and graduates and the percentage of women to all students and graduates for each year since 1905. Figures for the years 1905 through 1929 include students of Class A, B, and C schools; those for 1930 and subsequent years represent students of approved schools only.

In 1950-1951, women in the medical and basic science schools of the United States totaled 1,564, or 5.9% of all students, while the Canadian schools reported 214 women students, or 6.1% of all students. The total number of women students in schools of the United States is 242 less than for the preceding year. Furthermore, due to the disproportionate increase in the number of male students, women now comprise only 5.9% of the total, as compared to 7.2% for the preceding year. There has been a progressive decline in the total number of women students for the past five years. The total of freshman women was 376, or 5.3% of the class, as compared with 387, or 5.5%, last year.

The number of women graduates from United States medical schools decreased for the third year. The total was 468, or 7.6% of all graduates, as compared with 595, or 10.7%, in 1949-1950.

In Canada, women graduates numbered 63, or 7.3% of the total.

Dartmouth, North Dakota and Jefferson had no women students and the Woman's Medical College no men students. The number of schools with more than 30 women students declined from 15 to nine during the past academic year.

Veterans in Medical Schools

Veterans enrolled in medical and basic science schools in the United States in 1950-1951 numbered 14,528, or 55.4% of all students. The number of veterans decreased by 2,013, or 10.5%, from the preceding year. Seventy-four of the veterans were women.

In Table 14 the composition of the student body of medical and basic science schools in this country is recapitulated by classes. Veterans comprised 39.9% of the freshman class, or 19% less than in last year's freshman class. This is the smallest group of veterans to be enrolled in freshman classes since the end of the war. The percentage of veterans in other classes were: sophomores 55.4; juniors 63.5, and seniors 65.5.

Negro Medical Students

The total number of Negro students enrolled in medical schools in the United States during 1950-1951 was 658, or 2.5% of all students. These students were enrolled in 46 schools, with 275 enrolled at Howard University, 245 enrolled at Meharry Medical College, and 138 in other institutions. There were 179 freshmen, 169 sophomores, 165 juniors, and 145 seniors.

TABLE 16.—*Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1950-1951*

	Home State	Other State	Territories and Possessions	Canadian	Foreign	Totals
United States						
Medical College of Alabama	56	0	0	0	0	56
University of Arkansas	90	0	0	0	0	90
University of California	60	9	2	0	1	72
College of Medical Evangelists	22	61	1	2	11	97
University of Southern California	64	5	0	0	0	69
Stanford University	50	6	3	0	3	62
University of Colorado	68	16	0	0	0	84
Yale University (Connecticut)	13	52	0	0	1	66
Georgetown University (Dist. of Columbia)	4	118	0	0	0	122
George Washington University	17	72	1	0	1	91
Howard University	13	57	0	0	5	75
Emory University (Georgia)	38	34	0	0	0	72
Medical College of Georgia	79	0	0	0	0	79
Chicago Medical School (Illinois)	7	65	0	0	0	72
Northwestern University	37	89	1	1	2	130
Stritch School of Medicine	45	44	3	0	0	92
University of Chicago	26	45	3	0	2	76
University of Illinois	169	0	0	0	0	169
Indiana University	146	3	0	0	2	151
State University of Iowa	114	7	0	0	0	121
University of Kansas	98	6	0	0	1	105
University of Louisville (Kentucky)	88	8	0	0	0	96
Louisiana State University	126	0	0	0	0	126
Tulane University of Louisiana	58	65	3	0	4	130
Johns Hopkins University (Maryland)	16	61	0	0	1	78
University of Maryland	73	25	2	0	0	100
Boston University (Massachusetts)	42	30	0	0	1	73
Harvard Medical School	20	87	0	0	6	113
Tufts College Medical School	76	36	0	0	0	112
University of Michigan	157	5	3	0	0	165
Wayne University	68	0	0	0	0	68
University of Minnesota	116	12	0	0	0	128
University of Mississippi	61	0	0	0	0	61*
University of Missouri	45	0	0	0	0	45
St. Louis University	29	93	5	0	2	129
Washington University	35	50	1	0	2	88
Creighton University (Nebraska)	20	50	4	0	1	75
University of Nebraska	82	5	1	0	0	88
Dartmouth Med. School (New Hampshire)	4	20	0	0	0	24
Albany Medical College (New York)	39	16	0	0	0	55
State University of New York, Brooklyn	131	17	0	0	1	149
University of Buffalo	53	20	0	0	1	74
Columbia University	42	78	0	0	0	120
Cornell University	30	51	0	0	0	81
New York Medical College	81	47	0	0	1	129
New York University	99	25	1	0	0	125
University of Rochester	29	40	0	0	1	70
State University of New York, Syracuse	69	5	1	0	2	77
University of North Carolina	59	0	0	0	0	59
Duke University	34	47	0	0	0	81
Bowman Gray School of Medicine	34	19	0	0	0	53
University of North Dakota	35	1	0	0	0	36
University of Cincinnati (Ohio)	70	19	0	0	1	90
Western Reserve University	58	20	0	0	3	81
Ohio State University	150	0	0	0	0	150
University of Oklahoma	80	0	0	0	0	80
University of Oregon	60	11	1	0	1	73
Hahnemann Med. College (Pennsylvania)	75	28	2	0	0	105
Jefferson Medical College	107	60	1	0	0	168
Temple University	95	33	5	0	2	135
University of Pennsylvania	77	48	0	0	0	125
Woman's Medical College	14	36	0	0	0	50
University of Pittsburgh	100	1	0	0	0	101
Medical College of South Carolina	62	0	0	0	0	62
University of South Dakota	33	0	0	0	0	33
University of Tennessee	146	0	0	0	0	146
Meharry Medical College	5	58	0	0	2	65
Vanderbilt University	15	37	0	0	0	52
Southwestern Medical School (Texas)	103	0	0	0	0	103
Baylor University	80	11	0	0	1	92
University of Texas	163	0	0	0	0	163
University of Utah	44	6	1	0	1	52
University of Vermont	21	26	0	0	0	47
University of Virginia	64	10	0	0	0	74
Medical College of Virginia	72	10	1	0	1	84
University of Washington	65	4	5	1	0	75
West Virginia University	31	0	0	0	0	31
University of Wisconsin	83	2	0	0	0	85
Marquette University	54	43	4	0	0	101
Totals	4,994	2,065	55	4	64	7,182
Canada						
University of Alberta	0	0	0	54	0	54
University of Manitoba	0	0	0	71	1	72
Dalhousie University (Nova Scotia)	0	0	0	58	0	58
Queen's University (Ontario)	0	3	0	61	0	64**
University of Ottawa	0	1	0	59	0	60
University of Western Ontario	0	0	0	60	0	60
University of Toronto	0	0	0	148	1	149**
McGill University (Quebec)	0	37	1	69	9	116
University of Montreal	0	4	0	114	3	121
Laval University	0	6	0	158	0	164
University of Saskatchewan	0	0	0	32	0	32
Totals	0	51	1	884	14	950
Totals	4,994	2,116	56	888	78	8,132

* Figures include two freshman classes.

** Figures are for students in beginning premedical year.

Geographic Source of Freshman Students

Table 15 shows the residence of students in the 1950-1951 freshman class of each medical and basic science school in the United States and Canada at the time of enrolment. Individuals may change residence and often live in states other than those in which they were born. Therefore, the home states given in this table are not necessarily either states of birth or of permanent residence. Table 15 reports the residence of 950 freshmen in Canadian schools. This figure differs somewhat from freshmen enrolment figures given in other tables because Table 15 employs the figures for the first class of premedical students at Queen's and Toronto, since these students are already registered in those schools.

TABLE 17.—*Ratio of Freshmen Medical Students to State Populations, 1950-1951*

Numbers of students per 100,000 of population [1] in the medical and basic science schools of the United States

*New Mexico	2.4	Wisconsin	4.9
*Nevada	2.5	District of Columbia	5.0
*Maine	2.5	Oregon	5.0
*Florida	2.8	Virginia	5.0
*Arizona	2.8	Washington	5.0
California	3.0	Ohio	5.1
West Virginia	3.1	Maryland	5.2
Missouri	3.4	Connecticut	5.3
Alabama	3.5	Iowa	5.3
*Idaho	3.6	*Montana	5.3
North Carolina	3.6	Arkansas	5.4
Illinois	3.8	Tennessee	5.5
New Hampshire	3.8	Kansas	5.6
South Carolina	3.8	*New Jersey	5.6
Kentucky	3.9	New York	5.6
Georgia	4.0	Pennsylvania	5.6
Michigan	4.4	Vermont	5.9
Indiana	4.5	Colorado	6.7
Mississippi	4.5	Louisiana	7.2
Oklahoma	4.6	South Dakota	7.2
*Delaware	4.7	Utah	7.9
Massachusetts	4.9	*Wyoming	8.0
Minnesota	4.9	Nebraska	8.1
*Rhode Island	4.9	North Dakota	8.3
Texas	4.9		

* State with no medical school.

1. 1950 Census of Population, Preliminary Counts, PC-3, No. 10, Feb. 16, 1951, Washington, D. C.

The trend toward exclusion of out-of-state students by state and municipally owned schools continued. The number of publicly owned schools which did not admit nonresident students increased for the fifth successive year and now totals 17, as compared with 15 in 1950, 13 in 1949, 9 in 1948, 7 in 1947, and none in 1946. Three schools, one less than last year, admitted only one or two nonresidents.

Twenty-three schools, one more than last year, admitted more nonresident than resident students.

Of the total of 3,473 freshmen students admitted last year by state and municipal schools, 236, or 6.9%, were nonresidents, as compared with 249, or 7.2%, last year, 8.2% in 1948, and 17.4% in 1941-1942.

Privately owned schools admitted a total of 3,709 students during the current year, of whom 1,951, or 52.6%, were nonresident. This percentage did not differ significantly from the 53.1% reported last year and is nearly identical with the 52.9% reported in 1941-1942.

In Table 16 are recapitulated the number of resident students, students from other states, students from the territories and outlying possessions of the United States, Canadian students, and foreign students enrolled in the 1950-1951 freshman class in each school in the United States and Canada.

In Table 17 is shown the number of first year medical students per 100,000 population for each state. For the nation as a whole there were 4.8 freshman medical students per 100,000 inhabitants. The ratio is identical with last year's ratio. This is accounted for by the fact that the increase in freshman enrolment was offset by the increase in the total population. The 11 states without medical or basic science schools had an average of 4.3 first year students per 100,000 population while those states having such schools had an average of 4.9 freshmen per 100,000.

There were 56 freshman students, 21 less than last year, from the United States' territories and possessions. One of these students was enrolled in a Canadian school, the remainder in the United States. Only four Canadians, 18 less than last year, were admitted by schools in the United States.

Sixty-four other foreign students, seven more than last year, were enrolled in schools in the United States. Of the 950 students entering Canadian schools, 51, three more than last year, came from the United States. Canadian schools enroled 14 freshmen from other foreign countries.

Required Internships

Only six schools in the United States and four in Canada require that their students complete an internship. These schools are listed in Table 18. However, for many years more than 99% of all graduates have voluntarily served an internship and a majority have had additional hospital training before entering practice.

In the last year, Northwestern University discontinued the required internship and Ottawa University joined the list of Canadian schools requiring it. Duke University gives the M.D. degree at the end of the four year medical course but requires its students to sign a written agreement that they will spend two years training in a hospital or laboratory before beginning practice. The other schools in this list withhold the M.D. degree until an internship has been completed. Several schools permit substitution of a year of laboratory work for the internship.

The number of United States students enroled in intern years required by their schools is given for each year since 1930-1931 in Table 8.

TABLE 18.—*Medical Schools Requiring an Internship*

United States
College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
University of Minnesota Medical School
Duke University School of Medicine*
Canada
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Ottawa Faculty of Medicine
University of Montreal Faculty of Medicine

* Degree not withheld until internship completed.

One year of internship, as a prerequisite to licensure, is required by the licensing boards of 24 states, the District of Columbia, Alaska, Hawaii, Virgin Islands, and Puerto Rico. The internship requirement was instituted during the past year by Colorado, Kansas and Guam; it was discontinued by Montana and the Canal Zone. Those licensing boards which require an internship and the 15

boards which specify a rotating internship are indicated in Table 19.

Licenses of candidates from schools which require an internship are withheld until completion of the internship by five states (Connecticut, Maryland, Missouri, Texas, and Virginia) whose laws do not otherwise require internships.

Internships are required by certain states, in addition to those listed in Table 19 for graduates of schools outside the United States and Canada and for candidates seeking licensure by reciprocity or endorsement.

Hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states requiring an internship for licensure. The current list of approved internships will be published in the Sept. 29, 1951, issue of THE JOURNAL.

TABLE 19.—*Medical Licensing Boards Requiring a One Year Internship**

Alabama	Nevada	Vermont [1]
Arizona	New Hampshire	Washington [1]
Colorado	New Jersey [1]	West Virginia
Delaware [1]	North Dakota [1]	Wisconsin [1]
District of Columbia	Oklahoma [1]	Wyoming [1]
Idaho	Oregon [1]	Alaska
Illinois [1]	Pennsylvania [1]	Guam
Iowa [1]	Rhode Island [1]	Hawaii [1]
Kansas	South Dakota	Puerto Rico [1]
Michigan [1]	Utah	Virgin Islands

* Some other states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.
1. Internship must be a rotating service.

Preprofessional Requirements

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved medical schools since 1918 has been two years of college training. In 1938 the Council recommended that at least three years of college work be required of all candidates for admission. All state licensing boards require that an applicant for licensure present evidence of having completed at least two years of premedical study in college. California, the last state to institute this requirement, enacted a bill during the present year requiring two years of college work for present graduates and three years for graduates after Jan. 1, 1955.

Seventy-seven of the 79 medical and basic science schools in the United States require three or more years of premedical study. Five of the Canadian schools have a similar requirement. Nine schools, Georgetown, Chicago Medical School, Johns Hopkins, Tufts, New York Medical College, Cornell, Vanderbilt, Montreal, and Laval, require a bachelor's degree. Georgetown, however, requires only three years of college work from veterans. Cornell and Vanderbilt will accept students with three years of college work, provided their colleges will grant them a bachelor's degree on the successful completion of the first year of medical school.

Of the freshmen who entered medical school in the United States during the past year, 5,249, or 73.1% had baccalaureate degrees; 408, or 5.7%, had attended college four years but had received no degree; 1,437, or 20.3%, had had three years of college work, and only 63, or 0.9%, had had only two years of college.

College Record of 1950 Freshman Class

In last year's Educational Number, attention was called to the fact that, while medical schools have tended to raise their qualitative standards for admission in recent years, serious misconceptions exist in many quarters concerning the qualifications that a student must possess to gain admission to medical school. Thus it was pointed out that statements had appeared in the public press to the effect that students who do not maintain a straight "A" average in college have little or no chance of being admitted to medical school. To correct such misconceptions information was obtained and published in last year's report as to the number of students entering medical school in the year 1949-1950 whose college grade point average was less than "B minus." Seventy-four schools were able to furnish this information. Of these, 54 admitted a total of 592 students, or 9.1% of the freshmen in the 74 schools reporting, whose college averages were less than "B minus."

This year, in an attempt to define the situation more completely, schools were asked to report the number of freshmen entering medical school during the year 1950-1951 whose college averages were less than "B minus" and the number whose averages were higher than "B plus." Seventy of the 79 medical and basic science schools in the United States were able to provide this information. Fifty-eight of the 70 schools admitted one or more students with college averages of less than "B minus." The highest number in any one school was 82. The total number of such students was 1,181, or 18.6%, of the freshmen in the 70 schools reporting.

All 70 schools admitted students with college averages of better than "B plus." No school, however, reported that all its entering students had records better than "B plus." The total number of such students was 2,519, or 39.6%, of the freshmen in the 70 schools reporting.

From this study it can be seen that approximately 40% of the students entering medical school last year had "A" averages, approximately 40% had "B" averages, and almost 20% had averages of "C" or lower in their college work.

Official statistics compiled by the Association of American Medical Colleges from data supplied by all medical schools in the United States show that there was a drop of more than 2,000 in the total number of students that applied to the medical schools for admission to the class that entered medical school in the year 1950-1951, as compared with the preceding class.[1] The drop was from 24,434 individuals applying for admission in 1949-1950 to 22,279 applying for the class entering in 1950-1951. As already noted, the number of students who actually enrolled in the 1950-1951 freshman class was 7,182. From these figures it can be computed that one out of every 3.11 applicants was successful in entering medical school. In the preceding year the ratio was one out of every 3.47 applicants.

It is well known that many of the 22,279 persons who sought to enter medical school last year were repeaters who had tried in one or more previous years to gain ad-

1. Stalnaker, J. M.: Study of Applicants for Admission to United States Medical Colleges—Classes Entering in 1950-1951, Medical Education 26: 1-6 (Jan.) 1951.

mission. Thus the figure 22,279 cannot be taken as representing a single annual crop of college students who had just completed their premedical education. Just how many repeaters are included among the 22,279 applicants is not known. It is hoped that a study to obtain this important information will be made in the next few months with respect to those who sought to enter medical school in 1951-1952.

When taken together, the sharp increase in the number of students with "C" averages or less who were admitted to the 1950-1951 freshman class and the definite drop in the total number of applicants for that class would seem to indicate that the large pool of unusually able applicants with which most medical schools have been favored since the end of the war may be shrinking. This trend is not surprising, since it has been generally recognized that the experience of recent years with respect to the number of and quality of applicants has been an abnormal one brought about by the large number of men from several college generations whose education was interrupted by the war and who on discharge from service more or less simultaneously resumed and completed their premedical education and sought admission to medical school. It is likely, too, that this number was further augmented above the normal expectancy by students who would not have sought a professional education had not the benefits of the G. I. Bill of Rights been available.

As the backlog of veterans is further reduced, it may be expected that the number of applicants will be still further reduced until something approaching a stable plateau is reached. The contemplated study of the number of applicants applying to medical school each year for the first time will be of great value in the early detection of this plateau.

Despite the expected further reduction in the number of applicants and the further increases in enrolments that are expected, it is not likely that there will be an insufficient number of candidates with at least minimum qualifications to fill the available places in the freshman classes in the medical schools in the years ahead. It is likely, however, that the schools will have to admit more students whose scholastic records are borderline from the point of view of offering promise of the capacity to do satisfactory work in medical school. As a consequence the rate of failures in medical school which has dropped significantly in the last few years may be expected to rise.

Those schools that restrict admissions to residents of a single state will probably have the greatest difficulty in finding suitable students to fill all their available places. In fact, it may be predicted that some of these schools will have to relax their restrictions if they are to maintain the same quality of student body that they have enjoyed in recent years.

The 1951 Freshman Class

The 1950 freshman class numbering 7,182 students was the largest ever enrolled in medical schools in the United States. Figures submitted by the schools indicate that the 1951 freshman class will be even larger and will total close to 7,400. By June of this year the schools had already selected 7,157 students. This number includes 1,639 male veterans (22.9%), 5,135 other men (71.8%) and 383 women (5.3%). Six of the women were veterans.

Canadian medical schools up to June had enrolled 449 students, of whom 415 were men and 34 were women. Total expected enrolment is 931.

Major Developments in the Medical Schools

Each medical school was asked to describe briefly major new developments during the past year that might be of general interest. The developments that were reported may be summarized under the headings of curricular changes, institutional affiliations, organization and administration and miscellaneous.

Thirteen schools instituted major changes in the curriculum of one or more years. These schools included Alabama, Buffalo, Cornell, Louisville, Mississippi, Nebraska, North Dakota, Northwestern, Pennsylvania, South Carolina, St. Louis, Utah, and Vermont. As was the case with schools reporting changes last year, almost all reported that the changes were effected to reduce the amount of didactic instruction in the clinical years, to make possible the earlier introduction of clinical subjects or to promote closer correlation or integration between departments.

Under the heading of organization and administration, several schools reported the appointment of full-time faculty members in clinical departments that had previously been staffed entirely by part-time personnel. Three schools organized departments of public health and preventive medicine as independent units for the first time or completely reorganized existing departments. Louisville changed the name of its department to the department of community health; Virginia separated its department of preventive medicine and bacteriology to establish a department of social and environmental medicine and a department of microbiology. North Dakota organized a department of preventive medicine and public health for the first time.

Only a few new hospital affiliations were announced: Temple established an affiliation with the Episcopal Hospital of Philadelphia, North Dakota with the Deaconess and St. Michael's Hospitals in Grand Forks, N. D., and South Dakota with the Veterans Administration Hospital at Sioux Falls, S. D. The State University College of Medicine at New York City expanded its services at Kings County Hospital, and Stanford added a pediatric service to its services at the San Francisco Hospital.

In the following summary of construction programs, an effort has been made not to include in any category projects reported in the same category last year. A number of schools reported that new medical school buildings proper or major additions to their existing buildings were under construction or were completed during the past year. Schools reporting actual new construction were Buffalo, California at San Francisco, Indiana, Kansas, Meharry, North Carolina, Oklahoma, Southern California, South Dakota, and Virginia.

Stanford and Indiana reported extensive remodeling or renovations of existing buildings.

The following schools reported that additions to existing clinical facilities or the construction of new clinical

facilities owned and operated by the schools were under construction: California at San Francisco, University of Chicago, Indiana, Kansas, Minnesota, North Carolina, and Woman's.

The following special building projects were reported as being under way or completed: Stritch, a cancer research laboratory; Louisville, a virology laboratory; St. Louis, a cancer research institute; North Dakota, research laboratories; Temple, a cancer research laboratory, and Utah, a radiobiology laboratory.

The following schools in addition to projects that may be listed above, have indicated that they are in the process of planning the early construction of various units for which funds are available. Some of these projects were reported in the same category last year: Arkansas, State University of New York at New York, Louisiana, Mississippi, State University of New York at Syracuse, Oregon, South Carolina, Southwestern, Temple, Wayne, and West Virginia.

Figures as to the actual or expected cost was submitted for only about one-third of the projects listed above. The figures that were supplied this year for the first time totaled slightly more than 60 million dollars.

The following miscellaneous developments appear to be of most general interest. Cornell received a grant of $344,000 from the Commonwealth Fund for an experiment in the teaching and practice of comprehensive medicine. The purpose of this new undertaking is to provide continuous medical care for a portion of the patients who visit the outpatient department of the New York Hospital and to make it possible for senior students to be associated with the same patients over a relatively long consecutive period of time. Families as well as individuals will be cared for, and there will be an extension of services into the home.

Buffalo received a grant of $300,000 a year from the State Department of Health for the operation of a chronic disease research institute. The school also received a grant of $24,000 from the State Department of Health for a full time director of postgraduate education and the regional hospital programs sponsored by the school.

Kansas received a grant of $30,000 a year for a minimum period of five years to support its program of postgraduate education and also received a grant of $100,000 to construct a continuation center.

Utah has initiated a program of postgraduate medical education to serve the states of Utah, Nevada, Arizona, and Idaho.

Oklahoma initiated a program of postgraduate medical education in cooperation with the State Medical Association.

South Dakota was successful in sponsoring a new state-pound law which makes unclaimed dogs available to the medical school. The school also sponsored the organization of the South Dakota Medical School Endowment Association which began an active campaign for funds during the past year.

Boston reported that several of the heads and other members of its major clinical departments had formed a group practice organization as a nonprofit undertaking.

Northwestern reported receipt of an endowment fund of $750,000 for its department of medicine. The College of Medical Evangelists received a gift of $340,000, and Southern California, a gift of $350,000. Stritch reported that at a benefit dinner sponsored by Cardinal Stritch, for whom the school is named, a fund of approximately $250,000 was raised.

Preparation for General Practice

The need for the continuing production of physicians who will have a primary interest in serving as family physicians or general practitioners continues to hold the attention of many medical schools. Thus 54 schools in the United States report that they are sponsoring one or more programs designed to interest and prepare students for careers in general practice.

Several schools report that their entire educational program has been designed with the primary purpose of preparing students adequately for general practice. Special activities which are being conducted by the medical schools to stimulate interest in general practice include: scholarship programs, home medical service and family advisor programs, courses or series of lectures on general practice by outstanding general practitioners and the organization of general medical clinics in which the conditions of general practice are simulated. A number of schools attempt to develop the students interest through a counseling program. Other schools have affiliated with groups of rural hospitals and have found that recent graduates have been attracted to practice in the communities in which these hospitals are located.

Nineteen schools have established preceptorships whereby students work with general practitioners in outlying communities. In nine schools the preceptorship is a required part of the undergraduate course. In the other 10 it is elective. The total number of students who served preceptorships last year was 713. In 14 schools the preceptorship comes during the summer following the third year or in the fourth year. In the other schools it comes in the summer at the end of the second year or during the third year. The duration of the preceptorship varies from one week to four months. In five schools it is less than one month; in six schools it is one month to six weeks, and in the remaining eight schools it is two to three months.

Twenty-five schools are sponsoring internships, and 19 are sponsoring residencies in their affiliated hospitals that are specifically designed for prospective general practitioners.

Vacancies on Instructional Staffs

The number of vacant or newly created full time positions for the year 1951-1952 that the medical schools had been unable to fill up to June 1951 is somewhat lower than the comparable figures for the preceding two years. The total for the present year for the schools in the United States is 235. In 1950 it was 281, and in 1949 it was 441.

For the coming academic year, 20 schools, the same number as last year, report no unfilled positions. Fifty-one schools had a total of 157 unfilled positions in the preclinical departments. Twenty-seven schools reported a total of 78 unfilled positions in the clinical departments. Last year there were 175 vacancies in preclinical departments and 104 in clinical departments.

The number of unfilled positions are shown by departments in Table 20. There has been no significant change in the relative number of vacancies among the preclinical departments except in biochemistry, which last year had the second highest number of vacancies and this year has the lowest number.

In the clinical departments vacancies in psychiatry and general surgery are relatively fewer than a year ago, and those in pediatrics are relatively more numerous. Otherwise no significant changes are noted.

In Canada seven medical schools reported no unfilled positions. Four schools reported a total of 15 unfilled positions, of which 11 are in the preclinical departments and four in clinical departments.

Financial Support of Medical Schools

The budgets of the medical and basic science schools in the United States for the academic year 1951-1952 total approximately $74,350,000. This sum represents an increase of $6,850,000 over the figures reported for the previous year. Since the number of schools reporting and the methods used by the schools in reporting their budgets are the same as for last year, no corrections to arrive at a net increase are necessary this year.

TABLE 20.—*Total Number of Unfilled Full Time Positions by Departments in the Medical and Basic Science Schools of the United States, 1951-1952*

	Number of Unfilled Positions
Preclinical Departments	
Anatomy	36
Physiology	34
Pathology	32
Microbiology	21
Pharmacology	18
Biochemistry	16
Total	157
Clinical Departments	
Pediatrics	15
Internal Medicine	13
Preventive Medicine and Public Health	9
Obstetrics and Gynecology	8
Psychiatry	8
Anesthesiology	7
Radiology	7
Physical Medicine and Rehabilitation	4
General Surgery	3
Dermatology	1
Oncology	1
Ophthalmology	1
Orthopedic Surgery	1
Total	78
Grand Total	235

This year's figures include the cost of plant maintenance and the cost of operating the library for all but two schools. As was the case last year, all schools that carry a charge for general university administration in their budgets were able to subtract this item. Such charges are not included in the $74,350,000. Also not included are a variety of items which total just over a million dollars for such activities as postgraduate education, scholarships, fellowships, public relations and fund raising that some schools reported separately from their regular budgets.

The figure $74,350,000 does not include grants for research or for special teaching projects from outside agencies or any significant portion of the cost of operating the teaching hospitals affiliated with the medical schools. It does include a total of approximately $3,250,000 that the medical schools will spend toward certain activities in their affiliated hospitals. This sum, which is approximately $350,000 greater than in the previous year, is largely made up of salaries of professional and technical personnel on hospital staffs, the cost of operating special laboratories and in a few instances contributions to the operating budgets of hospitals and dispensaries used by the medical school for teaching purposes. As in previous years no attempt has been made to compute the direct and frequently substantial contributions that a number of teaching hospitals make to the educational programs of their affiliated medical schools or to estimate the value of the services contributed by the unpaid members of the teaching staff who in a number of schools are still responsible for a major part of the instruction, especially in the clinical departments.

It has already been noted under the section on major developments in the medical schools that during the past year the schools were engaged in constructing new facilities of various types and that the cost of only one third of these projects totaled more than 60 million dollars.

The schools estimate that receipts from tuition fees during the coming year will total $16,300,000, or 21.9% of their budgets. Last year tuition fees provided $15,200,000, or 22.5% of the budgets. The number of schools unable to match student fees dollar for dollar in their basic budgets with funds from nonstudent sources remains at eight.

Thirty medical schools, as compared to 24 last year, report budgets of over one million dollars for the coming academic year. Four of these schools will have budgets of over two million. Fourteen of the four year schools report budgets of less than $500,000 as compared with thirteen last year.

The schools have estimated that during the academic year 1951-1952 they will receive from outside agencies a total of 31 million dollars in grants for research and $4,250,000 in grants for special teaching activities. Funds received in these categories last year totaled 30 million dollars and $4,400,000, respectively. All but one school received funds in both categories. Among the four year schools the range in grants for research varied from $17,000 to $2,900,000. Seven schools received more than one million dollars in grants for research, and 12 other schools received between $500,000 and one million. Among the four year schools special grants for teaching ranged from $24,000 to $211,000.

Adding the research and special teaching grants that the medical schools expect to receive from outside agencies during the coming academic year to their budgets for this period gives a total of $109,600,000 that will be expended directly by the medical schools in the coming year in support of their total programs. These programs include many activities in addition to the instruction of undergraduate students. As remarked upon last year, Dr. John E. Deitrick, Director of the Survey of Medical Education, has emphasized that a modern

medical school supports a broad program of instruction, research and service. In the section of this report on the responsibilities of medical schools for other students, it is clearly shown that medical schools are providing directly for the educational needs of large numbers of other students in addition to undergraduate medical students. Almost one-third of the total sum that will be expended by the medical schools next year is definitely earmarked for research and a smaller portion for the support of clinical activities. Additional direct and indirect support of research and clinical services will undoubtedly be provided by the basic budgets of many schools although the actual amount cannot be estimated.

Earlier this year the Surgeon General's Committee on Medical School Grants and Finances published its report of a study of the expenditures and needs of the medical schools during the academic year 1947-1948. In that year the committee reported the seventy-nine medical schools spent a total of $53,451,000 for maintaining basic operations. This sum includes essentially all of the items represented in the budgets of the medical schools as reported in the Educational Number except for the expense of maintaining clinical facilities, research supported by university funds that is budgeted separately and a few minor activities that are relatively insignificant in terms of total expenditures. In the same year the committee reported that the medical schools spent a total of $17,100,000 for separately budgeted research. This sum was largely made up of research grants from outside agencies but also included some university funds. The total expenditure during the academic year 1947-1948 for basic operations and for separately budgeted research was $70,551,000.

After evaluating the unmet needs of the medical schools the Surgeon General's Committee concluded, "We estimate that the unmet needs pointed out above could be financed only by the expenditure of about 40 million dollars a year more than the medical schools are now spending for education and research. This estimate is based on the amount cited to us by the medical schools. This figure may be substantially discounted as representing the wishes and aspirations of those who have a sharp interest in securing additional funds. Nevertheless, we have no doubt whatever that the additional annual income required by medical schools to perform their functions adequately is measured in tens of millions and not millions of dollars.

"In considering this estimate it should be borne in mind that the medical schools could not absorb an additional 40 million dollars a year immediately. This figure is a general measure of the level to which operating expenditures of medical schools should rise over a period of years."

As reported above, the total sum that the medical schools will have to expend for education and research during the year 1951-1952 is approximately $109,600,000. While the items covered by this estimate probably differ slightly from the items included by the Surgeon General's Committee in arriving at the figure of $70,551,000 as the total expenditure by the medical schools in 1947-1948 for basic operations and separately budgeted research, the differences are minor except for the inclusion in the 1951-1952 estimate of the $3,250,000 that the schools will spend to support clinical facilities. When this item is subtracted, the total sum available to the medical schools for the coming year becomes $106,350,000, a figure which can be compared with the 1947-1948 total of $70,551,000 for the purpose of estimating the progress that the medical schools have made in securing the additional financial support that the Surgeon General's Committee estimated as being needed. It can be seen that the schools will have available in 1951-1952 approximately 36 million dollars more than they expended four years earlier during the period covered by the study of the Surgeon General's Committee.

It is thus evident that in this four year period the goal of 40 million dollars has almost been met. In attempting to calculate the extent to which this increase has relieved the financial stress on the medical schools, however, several points must be carefully weighed. In the first place it must be recognized that not all medical schools have shared equally in this increase. As pointed out in previous reports, tax supported schools on the whole have fared better in recent years than privately supported schools although a number of the latter have made very substantial gains during the period covered. Part of the increase has been neutralized or nullified by the continuing rise in costs in general. Some of the increase has been used to support new or expanded undertakings. The estimates of the Surgeon General's Committee were based on what would be needed to support properly the programs of the medical schools at their 1947-1948 level. Finally, it must be pointed out that approximately 14 million dollars of the 36 million increase is specifically earmarked for research and, therefore, is not available to the medical schools to bolster other phases of their programs in need of additional financial support.

Even when allowance is made for these many factors, it is clear that very substantial progress has been made nationally in increasing the funds available to the medical schools and that the gap between available funds and needs, at least as forecast in 1948, has been greatly narrowed. With the increasing public understanding of the needs of the medical schools and with the National Fund for Medical Education and the American Medical Education Foundation now giving active assistance, it does not seem too much to hope that this gap will be further narrowed with the passing of each succeeding year. This statement should not be taken, however, to indicate that once the goal of 40 million dollars has been reached that all the needs of the medical schools will have been met for all time. Expanding programs and continuing efforts to improve quality alone will lead to the need for upward revisions of earlier estimates. If inflation and rising costs persist, they will, of course, accentuate the need for such revisions.

None of these considerations, however, can take away from the substantial gain that has been made in securing better support for medical education and the clear fact that the needs of medical education are being recognized and are not going unheeded by the American people.

In the period immediately after the war when medical schools were suddenly faced with the urgent need for immediate additional funds to maintain their programs, it was necessary to present the needs of the medical schools forcefully and dramatically. This need inevitably led to well-intentioned but sometimes overly pessimistic public statements depicting the disaster that was impending for individual schools or for the medical schools as a group. Unfortunately, some of the more extreme fears and predictions that were voiced in earlier years are still being echoed and at times by those who should be capable of calmer and more considered judgments. There can be no question that some schools still have large unmet needs. It is only proper, however, that the public be given an honest report of the progress that is being made. In the long run such a policy would seem to be essential if the medical schools are to hold the public's confidence and support.

Student Fees

Resident tuition fees in the 72 medical schools and the seven schools of the basic medical sciences in the United States for the academic year 1951-1952 will range from $97 to $867 except for one school which will charge a fee of $1,288. The median fee will be $660 as compared with $600 last year. The average fee will be $596 as compared with $554 in 1950-1951.

TABLE 21.—*Range of Annual Fees in Medical and Basic Science Schools in the United States and Canada*

	1950-1951 Number of Schools		1951-1952 Number of Schools	
	United States	Canada	United States	Canada
Less than $100	1	..	1	..
$100 to 199	3	..	3	..
200 to 299	7	..	7	..
300 to 399	11	4	8	6
400 to 499	8	4	10	5
500 to 599	9	3	7	..
600 to 699	11	..	5	..
700 to 799	17	..	14	..
800 to 899	12	..	23	..
1,000 and over	..	..	1	..
Total	79	11	79	11

Twenty-eight schools have announced increases in fees ranging from $10 to $210. One school has increased its tuition fee $550.

The average tuition fee now stands at 158% of the average tuition fee in 1939-1940 which was $378. As pointed out in the preceding section, however, tuition fees will provide only 21.9% of the cost of operating the medical schools during the forthcoming year.

In Table 21 the 19 medical schools and schools of the basic medical sciences in the United States and Canada have been arranged in groups according to the tuition fees that will be charged resident students for the session 1951-1952. This table also gives comparable statistics for the year 1950-1951. The figures in this table represent one-fourth of the total tuition fee charged for the four years of the medical school course including minor charges such as those for matriculation, breakage, diploma, and graduation. Thirty-six schools in the United States make an additional charge for nonresident students. In 34 schools these charges range from $12 to $600. One school charges nonresident students an additional fee of $1,070 and another an additional fee of $2,130.

Cost of Attending Medical School

In last year's Educational Number it was reported that estimates provided by the medical schools indicated that the minimum financial outlay experienced by a student in attending medical school for an academic year ranged from $567 to $2,252 with a median of $1,473. The average cost to a student for one year was reported to range from $800 to $2,500 with a median of $1,800.

Although the increase in tuition fees and the rise in living costs during the last year have probably added to these figures, it seemed likely that the estimates prepared last year were still sufficiently current so as to make unnecessary a further inquiry this year with respect to the cost of attending medical school.

An effort was made, however, to determine what percentage of students in the present first, second, and third year classes would be unable to finance their medical education without the aid of summer employment. Thirty-nine medical schools in the United States submitted this information for their freshman classes, 40 for their sophomore classes, and 34 for their junior classes.

Of the 3,468 freshmen in the schools included in this study 1,663, or 47.9%, reported they could not continue to finance their medical education without the aid of summer employment. For the sophomore class the figure was 1,585 of 3,220 students, or 49.2%, and for the junior class 1,237 of 2,958 students, or 41.8%.

These figures indicate the high percentage of medical students who feel they must rely in part or in whole on their own earnings to meet the costs of their medical education. Since it is known that some additional students who do not fall in the category of being unable to finance their medical education without summer work also seek employment to ease the financial burden on their families, the total figure of those who earn part or all of their medical education must be larger than that reported here.

The above figures are of particular significance in discussions with respect to the adoption of an accelerated program of medical education or of a program of lengthened academic years with relatively short summer vacations. In considering these problems, however, it would be desirable to have more precise studies of the amount of financial aid obtained by summer employment than could be attempted in this preliminary survey.

Private and Governmental Medical Schools

The medical schools in the United States are listed in Table 22 according to the nature of their ownership. There were no changes of ownership during the last year. Forty-one schools are owned by private, nonprofit corporations exempt from federal taxation; 35 schools are owned by states and three by municipal governments.

Enrolments in private schools during 1950-1951 numbered 14,191, or 54.2% of the total for the country. The enrolment in state and municipal schools was 12,000, or 45.8%.

Freshmen students in private schools numbered 3,709, or 51.7% of the total, and 3,473, or 48.3%, in the state and municipal schools.

Statistics with respect to resident and nonresident student enrolment in state and municipal as compared with private schools are presented in the section on the geographic sources of freshman students.

TABLE 22.—*Medical Schools Classified by Ownership, 1950-1951*

Privately Owned

1 College of Medical Evangelists (Calif.)
2 Stanford University School of Medicine
3 University of Southern California School of Medicine
4 Yale University School of Medicine (Conn.)
5 Georgetown University School of Medicine (D. C.)
6 George Washington University School of Medicine
7 Howard University College of Medicine
8 Emory University School of Medicine (Ga.)
9 Chicago Medical School (Ill.)
10 Northwestern University Medical School
11 Stritch School of Medicine of Loyola University
12 University of Chicago, The School of Medicine
13 Tulane University of Louisiana School of Medicine (La.)
14 Johns Hopkins University School of Medicine (Md.)
15 Boston University School of Medicine (Mass.)
16 Harvard Medical School
17 Tufts College Medical School
18 St. Louis University School of Medicine (Mo.)
19 Washington University School of Medicine
20 Creighton University School of Medicine (Nebr.)
21 Dartmouth Medical School (N. H.)
22 Albany Medical College (N. Y.)
23 Columbia University College of Physicians and Surgeons
24 Cornell University Medical College
25 New York Medical College, Flower and Fifth Avenue Hospitals
26 New York University College of Medicine
27 University of Buffalo School of Medicine
28 University of Rochester School of Medicine and Dentistry
29 Duke University School of Medicine (N. C.)
30 Bowman Gray School of Medicine of Wake Forest College
31 Western Reserve University School of Medicine (Ohio)
32 Hahnemann Medical College and Hospital of Philadelphia (Pa.)
33 Jefferson Medical College of Philadelphia
34 Temple University School of Medicine
35 University of Pennsylvania School of Medicine
36 University of Pittsburgh School of Medicine
37 Woman's Medical College of Pennsylvania
38 Meharry Medical College (Tenn.)
39 Vanderbilt University School of Medicine
40 Baylor University College of Medicine (Tex.)
41 Marquette University School of Medicine (Wis.)

State Owned

1 Medical College of Alabama
2 University of Arkansas School of Medicine
3 University of California School of Medicine
4 University of Colorado School of Medicine
5 Medical College of Georgia
6 University of Illinois College of Medicine
7 Indiana University School of Medicine
8 State University of Iowa College of Medicine
9 University of Kansas School of Medicine
10 Louisiana State University School of Medicine
11 University of Maryland School of Medicine
12 University of Michigan Medical School
13 University of Minnesota Medical School
14 University of Mississippi School of Medicine
15 University of Missouri School of Medicine
16 University of Nebraska College of Medicine
17 State University of New York, College of Medicine at New York City
18 State University of New York at Syracuse, College of Medicine
19 University of North Carolina School of Medicine
20 University of North Dakota School of Medicine
21 Ohio State University College of Medicine
22 University of Oklahoma School of Medicine
23 University of Oregon Medical School
24 Medical College of the State of South Carolina
25 University of South Dakota School of Medical Sciences
26 University of Tennessee College of Medicine
27 Southwestern Medical School of the University of Texas
28 University of Texas School of Medicine
29 University of Utah School of Medicine
30 University of Vermont College of Medicine
31 Medical College of Virginia
32 University of Virginia Department of Medicine
33 University of Washington School of Medicine
34 West Virginia University School of Medicine
35 University of Wisconsin Medical School

Municipally Owned

1 University of Louisville School of Medicine (Ky.)
2 Wayne University College of Medicine (Mich.)
3 University of Cincinnati College of Medicine (Ohio)

Budgets of state and municipal schools for 1951-1952 will total approximately $35,360,000; for the private schools $38,400,000.

Tuition fees of state and municipal schools for residents of their own states will vary in 1951-1952 from $97 to $804 with a median of $405. For private schools tuition fees will range from $484 to $1,288 with a median of $800.

New Medical Schools

Widespread interest in the development of new medical schools continued to be demonstrated during the past year. In several states and Puerto Rico real progress was recorded in establishing new schools or in expanding schools of the basic medical sciences to a full four-year program.

The University of Puerto Rico School of Medicine admitted its first freshman class in the fall of 1950. This school is planning the development of a four-year program. During the coming academic year the school will have both a freshman and a sophomore class enrolled.

The University of California in Los Angeles announced that it would admit its first freshman class in the fall of 1951, two years earlier than originally planned.

Mississippi is proceeding actively with the development of a four-year medical school at Jackson as authorized by the 1950 session of the Mississippi State Legislature. Plans for the construction of the medical school building and hospital are nearing completion. It is hoped that ground can be broken in the fall of 1951 and that the first third year class will be enrolled in the fall of 1953.

The 1951 session of the West Virginia State Legislature authorized the expansion of the West Virginia University School of Medicine to a four-year program and passed a soft drink tax to finance the development and operation of the school. The legislature empowered the governor to decide the location of the school. In June, the governor designated Morgantown as the site. Plans for the medical school building and teaching hospital are now being prepared.

In New Jersey, the Medical College Commission, appointed by the governor in 1950, reported to the 1951 Legislature that a medical school should be established and recommended its location in New Brunswick. It is reported that a special session of the New Jersey Legislature will be called this fall to make a definite decision on the establishment and location of the medical school and to provide for its financing.

In Rhode Island, the legislature voted to establish a commission to study the feasibility of developing a medical school as part of the University of Rhode Island.

In Massachusetts, the governor has appointed a committee to investigate the feasibility of establishing a medical school as a department of the University of Massachusetts.

The 1951 Florida legislature passed an act authorizing the state to make per capita payments to the first approved medical school in Florida to begin operation. The possibility of establishing a medical school is being seriously studied by the University of Miami.

Expansion to a four year program is still under active study by the basic science school of the University of Missouri.

Yeshiva University in New York City has announced its intention to develop a medical school and is at present engaged in raising the necessary funds.

In Canada, the University of British Columbia School of Medicine admitted its first freshman class in the Fall of 1950. The school, which will be a four-year school, will enrol a freshman and sophomore class in the coming academic year.

Foreign Medical Schools

In February, 1950, the Council on Medical Education and Hospitals and the Association of American Medical Colleges published their first list of foreign medical schools whose graduates they recommend be given consideration on the same basis as graduates of approved medical schools in the United States. The purpose of this list is to serve as a guide for individuals, particularly those who are considering medical study abroad, and for medical organizations and institutions in the United States. In developing the list, the two Councils have been aided by the Committee on Foreign Medical Credentials. This Committee, established to advise the Council, consists of representatives from 19 private and governmental agencies concerned with problems of medical education and licensure and the problems of foreign physicians.

Table 23 shows the schools now included in the list of foreign medical schools. In the past 18 months, 11 schools have been added to the original 38 schools listed in February, 1950, to bring the total to 49.

TABLE 23.—*Foreign Medical Schools*

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States. This list is not final and will be supplemented as information is compiled for other schools.

Belgium

Free University of Brussels Faculty of Medicine
(Université Libré de Bruxelles Faculté de Medicine)

Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Medicine or
Katholieke Universiteit te Leuven)

University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde, or
Université de Gand Faculté de Médecine)

University of Liege Faculty of Medicine
(Université de Liége Faculté de Medicine)

Brazil

University of Sao Paulo Faculty of Medicine
(Universidade de Sao Paulo Faculdade de Medicina)

Denmark

University of Copenhagen Faculty of Medicine
(Kobenhavns Universitet Laegevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)

Medical Faculty Turku University
(Turun Yliopiston Laaketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)

State University of Groningen Faculty of Medicine
(Rijks-Universiteit te Groningen Medische Faculteit)

State University of Leiden Faculty of Medicine
(Rijks-Universiteit te Leiden Faculteit der Geneeskunde)

State University of Utrecht Faculty of Medicine
(Rijks-Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medisinske Fakultet)

Sweden

Royal Charles University Medical Faculty, Lund
(Kungl. Karolinska Universitetet Medicinska Fakulteten)

Charles Medico-Surgical Institute, Stockholm
(Karolinska Medico-Kirurgiska institutet)

Royal University of Uppsala Medical Faculty
(Kungl. Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgendoissisches Departement Des Innern, Departement Federal de L'interieur) and obtainable only by Swiss citizens, or who hold the Certificate of Medical Studies (Akademische Zeugnis, Certificat d'Etudes Medicales) which is issued by the Departments of Education of the cantonal government and which is awarded to those not citizens of Switzerland who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma.

The recommendation does not apply to those holding only the M.D. degree from Swiss universities or those who have taken only faculty examinations and hold certificates other than the Swiss Federal Diploma of its equivalents: the Akademische Zeugnis or Certificat d'Etudes Medicales. The M.D. degree in Switzerland is frequently awarded on the basis of a thesis written during as little as one year in residence. Faculty diplomas may be issued to students who have not completed the full course of study and who have not passed the examinations required for the Swiss Federal Diploma or its equivalent.

Officials of State Boards and of other organizations who are in doubt as to the nature of credentials presented by individual graduates of Swiss schools are urged to communicate with the Director of the Schweizerisches Gesundheitsamt, Bern, Switzerland.

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)

University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)

University of Geneve Faculty of Medicine
(Université de Genève Faculté de Medecine)

University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Medecine)

University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

United Kingdom

The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed. The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who did not complete the work for the degree and who obtained their qualifications only through the examinations of the licensing corporations of the United Kingdom.

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School, Newcastle-upon-Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London†
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen's University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St. Andrews Medical School, St. Andrews and Dundee.

Wales

Welsh National School of Medicine, University of Wales, Cardiff

† Work for the medical degree of the University of London is offered at the following hospital medical schools:

Charing Cross Hospital Medical School
Guy's Hospital Medical School
King's College Hospital Medical School
London Hospital Medical School
Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St. Bartholomew's Hospital Medical School
St. George's Hospital Medical School
St. Mary's Hospital Medical School
St. Thomas' Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

It has been repeatedly emphasized that this list is a tentative one, to which other schools will be added when sufficient data has been compiled to justify their inclusion. Absence of a school from the list does not therefore necessarily imply disapproval. Hence it is the responsibility of individual institutions and organizations to decide whether to accept graduates of schools not included in this list.

The list of foreign medical schools is now accepted, as a guide by the licensing boards in 23 states.

Postgraduate and Continuation Courses for Physicians

The Council on Medical Education and Hospitals publishes semiannually in THE JOURNAL lists of postgraduate and continuation courses for physicians. The opportunities presented in these listings include a wide variety of fields in clinical medicine and in the basic sciences. These courses vary in length from a few days to a year or longer. Some are concentrated full-time courses; others are part-time. In the June 9, 1951, issue of THE JOURNAL, more than 800 courses covering the period from July 1, 1951, to Jan. 15, 1952, are listed. The medical schools take a prominent part in presenting this type of training. State and county medical societies, hospitals, state and city boards of health, and special societies are also active in providing leadership in developing this aspect of medical education.

With the exception of the formal basic science courses, these courses are not designed to prepare physicians for specialty board certification. Some opportunities, however, are offered for review work in preparation for examination in the specialties.

This section is devoted to an analysis of the courses offered during the period July 1, 1950, to June 30, 1951. Mention is also made of some of the recent developments in postgraduate education. The statistical summaries are divided into three groups: short review courses of less than five days, courses of five days' duration or longer and, lastly, a group including clinical conferences, graduate assemblies, study courses, and circuit courses. Comparable figures are also given for previous years.

RECENT DEVELOPMENTS

Postgraduate refresher courses are offered at the University of Arkansas School of Medicine as a joint effort of the State Medical Society, the Arkansas Academy of General Practice and the medical school. The general plans call for a refresher course in one department or another every two weeks except during the summer months.

A series of postgraduate short courses for medical officers will be given at five Army hospitals, the Armed Forces Institute of Pathology and the Medical Service Graduate School, Washington, D. C., during the last six months of this year. Eighteen courses will be given during this period. Courses will utilize lectures, conferences, round-table discussions, and clinics. Naval and Air Force medical officers have been invited to attend these courses. This program is in keeping with the Army Career Management Plan, which provides a continuance of professional education throughout the military career of all Medical Corps and Dental Corps officers of the Army Medical Service. Priority will be given to medical officers on active duty in the allotment of spaces, while medical officers not on active duty and civilian physicians are eligible to attend if space is available.

A basic science course for specialty training is offered by the postgraduate division of the University of Illinois College of Medicine. The course extends over a nine-month period and is designed to review the preclinical sciences against the student's background of undergraduate medical education and internship and to supplement the clinical experience obtained in residency training programs.

An experiment in postgraduate education is being undertaken by the Indiana State Medical Association. Programs are distributed once a month by private telephone wire to the 92 county societies throughout the state. The county society arranges for a private line to its meeting place and for a public address system. Listeners are furnished with brochures containing short biographies of the speakers, an outline of each address, reproductions of suitable visual aids, and space for notes.

Beth Israel Hospital, Boston, is planning an intensive one-week course in practical clinical electrocardiography. The course is designed for practicing physicians and beginners in electrocardiography who desire a short but practical introduction to the use of electrocardiograms in general practice.

A postgraduate course in the early detection of cancer is being offered by Wayne University College of Medicine, Detroit. The course is scheduled so that it may be taken for three quarters or so that any one quarter may be elected. The course is designed to acquaint physicians with the means of diagnosis which are readily available to them.

A feature of the intern and resident education program at the Atlantic City Hospital, New Jersey, is the daily clinical conference, at which distinguished teacher-clinicians from leading medical centers discuss diagnostic problems from the hospital wards and present didactic lectures on subjects of particular interest. All licensed physicians are invited to attend these conferences.

Postgraduate training in orthopedic surgery is being offered by the Hospital for Joint Diseases, New York City. The curriculum will include a series of lectures, case demonstrations, and conferences on the clinical, diagnostic, therapeutic, pathologic, bacteriologic, chemical, and radiologic aspects of skeletal disease so integrated as to present a general review of the modern concept of the more important orthopedic diseases.

The Memorial Center for Cancer and Allied Diseases, New York City, is offering refresher courses to physician-anesthetists for periods of one to six months. Special emphasis is laid on anesthesia for head and neck surgery and for thoracic and radical pelvic surgery.

New York Hospital and Cornell University Medical College sponsors a weekly practitioners conference at which programs of special interest to the general practitioner are arranged. It is planned to have the conference in the form of clinics at which patients in the New York Hospital will be presented to illustrate the subject under discussion. Round-table technic will be employed. Emphasis will be placed on thorough case study, common errors in diagnosis, interpretation, and therapy. Emphasis will also be placed on the functional pathology and origin of common symptoms.

The Division of Postgraduate Medical Education of the University of Washington School of Medicine, Seattle, has scheduled postgraduate courses in hematology, clinical electrocardiography, psychiatry, and neurology in affiliation with the Washington State Medical Association and the State Department of Health.

ANALYSIS OF COURSES OFFERED, 1950-1951

Courses of Less Than Five Days' Duration.—Twenty-seven states and the District of Columbia provided courses of less than five days' duration for physicians desiring to continue professional study in or near their home communities. There were 420 courses offered.

TABLE 24.—*Short Review Courses of Less Than Five Days Duration, 1950-1951*

State Where Given	No. of Courses	State Where Given	No. of Courses
Alabama	5	Minnesota	18
California	29	Missouri	4
Colorado	9	Nebraska	2
Connecticut	1	New Jersey	7
District of Columbia	2	New York	179
Florida	4	Ohio	7
Georgia	1	Oklahoma	5
Illinois	29	Oregon	1
Indiana	5	Pennsylvania	4
Iowa	10	Tennessee	1
Kansas	16	Texas	15
Kentucky	4	Virginia	1
Massachusetts	11	Washington	5
Michigan	43	Wisconsin	2
Total			420

TABLE 25.—*Short Review Courses of Less Than Five Days Duration, 1950-1951*

Subject	No. of Courses Given	Attendance
Allergy	12	139
Anatomy	2	14
Arthritis	4	339
Anesthesiology	5	202
Bacteriology	1	6
Basic Science	1	1
Biochemistry	8	81
Cardiovascular Disease	9	504
Dermatology and Syphilology	13	108
Diabetes	2	97
Electrocardiography	15	526
Endocrinology	14	65
Endoscopy	8	35
Fractures	1	124
Gastroenterology	10	99
Geriatrics	1	46
Hematology	13	111
Histology	1	2
Industrial Medicine	1	1
Internal Medicine	18	58
Malignant Disease	5	15
Medicine—General	43	1,088
Neurology and Psychiatry	76	917
Nuclear Science	4	68
Obstetrics and Gynecology	35	678
Ophthalmology and Otolaryngology	22	259
Orthopedic Surgery	3	25
Pathology	7	28
Pediatrics	16	250
Physical Medicine	13	5
Physiology	2	31
Plastic Surgery	1	2
Poliomyelitis	2	61
Proctology	1	14
Public Health	1	41
Pulmonary Diseases	8	282
Radiology	14	279
Surgery	15	597
Therapy	4	62
Urology	6	37
Pharmacology	1	15
Tropical Medicine	1	12
Civilian Defense	1	24
	420	7,438

Table 24 lists these states and the number of courses given in each state. Forty-four subjects were covered. Table 25 lists the subjects and also shows the attendance recorded. The attendance numbered 7,438. More than 500 attended courses offered during the year in cardiovascular diseases, electrocardiography, general medicine, neurology and psychiatry, obstetrics and gynecology, and surgery. The greatest number were enrolled for courses in general medicine.

The courses varied in length from sessions of one hour or a series of five or more lectures to four and one-half days' full time and consisted of organized courses, clinics utilizing hospital patients, lectures and demonstrations. Of the 420 courses reported, 54 were four-day courses, 96 were three-day courses, 66 were two-day courses, and 47 were given in one full day. The remainder of the courses were reported by lectures, sessions, or hours. The instructors were chosen from physicians practicing in the state in which the courses were offered as well as from out of state. Medical school faculties participated in 296 courses. The facilities used for conducting these courses, in addition to medical schools, included hospitals, clinics, and hotels and also combinations of these facilities.

TABLE 26.—*Postgraduate Courses of Five Days or Longer, 1950-1951*

State Where Given	No. of Courses	State Where Given	No. of Courses
Arkansas	2	Minnesota	7
California	21	Missouri	3
Connecticut	8	New Jersey	20
Colorado	3	New York	474
District of Columbia	9	North Carolina	5
Georgia	42	Ohio	4
Illinois	238	Oregon	7
Kansas	5	Pennsylvania	52
Louisiana	22	Texas	4
Massachusetts	109	Washington	3
Michigan	38		
Total			1,067

TABLE 27.—*Postgraduate Courses of Five Days or Longer, 1950-1951*

Subject	No. of Courses Given	Attendance
Allergy	13	216
Anatomy	42	440
Arthritis	1	22
Anesthesiology	27	364
Bacteriology	6	102
Basic Science	13	83
Biochemistry	3	218
Cardiovascular Disease	42	995
Dermatology and Syphilology	22	145
Diabetes	6	44
Electrocardiography	34	861
Electroencephalography	3	2
Endocrinology	12	284
Endoscopy	35	128
Forensic Medicine	3	4
Fractures	9	61
Gastroenterology	30	307
Geriatrics	2	2
Hematology	19	104
Histology	2	4
Industrial Medicine	6	89
Internal Medicine	42	1,075
Malignant Disease	12	161
Medicine—General	43	1,756
Neurology and Psychiatry	53	1,475
Nuclear Science	1	143
Nutrition	4	2
Obstetrics and Gynecology	92	859
Ophthalmology and Otolaryngology	112	834
Orthopedic Surgery	22	45
Pathology	41	372
Pediatrics	54	679
Physical Medicine	17	67
Physiology	13	210
Plastic Surgery	1	68
Poliomyelitis	8	202
Proctology	16	139
Public Health	32	139
Pulmonary Diseases	7	597
Radiology	44	495
Surgery	104	871
Therapy	2	46
Urology	14	110
Venereal Disease	2	64
Tropical Medicine	1	6
Totals	1,067	14,890

These offerings were held every month, the majority being given in January, February, March, April, September, and October. In 13 instances they were arranged at the convenience of the applicant. Six courses are

offered continuously. Twenty were available for specialists only. Fees ranged from $5 to $250. The majority of the fees were less than $50. In 14 instances no fee was charged.

While the number of courses in this category increased from 161 in 1949-1950 to 420 in 1950-1951, the attendance did not increase correspondingly. The attendance reported was more than 2,000 below that of the previous year.

Courses of Five Days' Duration or Longer.—In centers where ample clinical facilities are available, 1,067 graduate courses of more than five days' duration were offered in 20 states and the District of Columbia during 1950-1951. These states and the number of courses which were given in each state are listed in Table 26. There were 1,067 such courses; the greatest number were offered in Illinois and New York.

These courses consisted of refresher courses of five or more days to intensive courses extending over one year. Courses in 45 subjects were given. Table 27 lists the subjects covered, the number of courses in each subject, and the total attendance for the courses in each subject. In this type of training the total attendance was 14,890. More than 1,000 physicians attended courses in internal medicine, general medicine, and neurology and psychiatry, and over 500 were enrolled for courses in cardiovascular disease, electrocardiography, obstetrics and gynecology, ophthalmology and otolaryngology, pediatrics, pulmonary diseases, and surgery.

The length of these courses varied from five days to one month for 523 courses. There were 429 courses offered ranging in length from one to four months and 90 from five to 12 months. There were four for three years, while the length of the course in 21 instances was arranged.

Instruction was both didactic and clinical for 725 courses, didactic only for 112, and clinical only for 29. The remainder did not specify the type of instruction.

Medical school facilities were used for 719 courses, hospitals for 181, and clinics for 30. In many instances, two or all three of these sources were used in presenting an individual course. Hotel and other facilities were used for 23 courses. The balance did not specify the facilities used.

The faculties of medical schools served as instructors in 733 courses. Additional instructors were specialists in their field, chosen mainly from physicians residing within the state in which the course was given but including as well physicians from outside the state.

Courses were offered during every month last year, and in 138 instances they were arranged to suit the convenience of physician-students. In 17 instances the courses were given continuously. There were 129 courses offered to specialists only. Fees ranged from $10 to $1,200. For six courses no fee was charged.

The reported attendance for the 1,067 courses given during 1950-1951 was 23,454. There were 79 courses reported cancelled. By comparison with the previous year, the number of courses given decreased by 13 and the attendance by 633.

One hundred and thirty-five agencies participated in the sponsoring of these courses, including 59 medical schools, 17 special societies, 8 state medical societies, 12 hospitals, 3 health departments, 4 county medical societies, 4 graduate schools of medicine, and the government agencies.

Clinical Conferences, Graduate Assemblies, Study and Circuit Courses.—In 21 states and the District of Columbia, 79 clinical conferences, graduate assemblies, and study and circuit courses were held during 1950-1951. This type of training varied in length from one-day sessions to two weeks for conferences, assemblies, and study courses. In six states, circuit courses were held at various times throughout the states in four to 20 centers. Contributing agencies were speakers' bureaus, medical schools, state and county medical societies, state health departments, and special societies. Twenty-two subjects were covered. The majority surveyed topics in general medicine and surgery. Other subjects covered were cardiovascular disease, diabetes, corticotrophin (ACTH) and cortisone, obstetrics and gynecology, ophthalmology, and pediatrics. Instruction was both didactic and clinical. The facilities of hospitals, clinics, and medical schools were used. Instructors included medical school faculties and physicians practicing in the state in which the training was given as well as from out of the state. Courses were given in every month except May and August. The fees ranged from $3 to $75. In 11 instances no fee was charged. The attendance numbered 23,855.

Summary.—Some form of continuation study was provided during 1950-1951 in 30 states and the District of Columbia. Table 28 summarizes for the three cate-

TABLE 28.—*Postgraduate Courses Offered and Attendance, 1945-1951*

	Less Than Five Days' Duration			Five or More Days			Clinical Conferences, Graduate Assemblies, Study and Circuit Courses			Total		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
1945-1946	154	128	4,140	1,070	1,043	19,991	52	52	21,824	1,276	1,223	45,955
1946-1947	239	205	16,274	1,291	1,137	23,062	21	21	20,475	1,551	1,363	59,811
1947-1948	496	478	31,569	1,279	1,183	24,878	25	25	26,356	1,800	1,686	82,803
1948-1949	304	202	16,821	1,074	984	28,507	67	67	38,058	1,445	1,313	83,386
1949-1950	161	161	10,523	1,080	1,080	24,087	129	129	40,708	1,370	1,370	75,318
1950-1951	420	420	7,438	1,067	1,047	23,454	79	74	23,855	1,566	1,541	54,747
Totals	1,774	1,654	86,765	6,861	6,474	143,979	373	368	171,276	9,008	8,496	402,020

gories of courses, the number of courses given, the number for which attendance was reported and the total attendance together with comparable figures for the five previous years. The total attendance for all three groups last year was 54,747. This represents a marked decrease in attendance as compared with the previous four years. A number of factors may be responsible for this decrease. The increased number of physicians entering military service during the past year undoubtedly removed a large group of potential students from among practicing physicians. Further, it is likely that in many communities the responsibilities of those physicians remaining were so increased as to make it difficult for them to leave their practices for extended periods of study. It is also probable that the drop in attendance reflects the fact that much of the demand for refresher courses by medical officers who served during World War II has been met. Question should also be raised as to whether courses are being planned in a manner designed to arouse the interest and satisfy the needs of the physician. Further study will be needed to determine the answer to this question and the trend of postgraduate education in the years ahead.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 assumed title to Jefferson Hospital and Hillman Hospital, Birmingham. The Medical College of Alabama cares for all indigent patients of the county and city, maintenance of which is paid to the university on a per diem basis by the county. In 1943 the appropriation included $1,000,000 for the building of a new medical school which is now under construction, and temporary quarters are now in the Jefferson-Hillman Hospital. After completion of the new building which will house the basic sciences the current enrollment of 56 in the freshman class will be increased to 80, beginning in the fall of 1951. First instruction in the Medical College of Alabama started June 4, 1945, with a junior class and this class was graduated in October 1946. On October 8, 1945, the School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty, were absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. Tuition is as follows: for legal residents of Alabama $400 per academic year plus incidental fees of $30. Nonresidents of the state are charged an additional $250 each session. The registration for the 1950-1951 session was 207; graduates 52. The last session began for the first and second years on Sept. 15, 1950, and for the third and fourth years on Sept. 8, 1950. The session ended for all four classes on June 2, 1951. The next session for the first and second year classes will start Sept. 21, 1951, and for the third and fourth year classes the session will begin Sept. 10, 1951. All classes will end May 31, 1952. The Dean is James J. Durrett, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are $380 a year; enrollment is restricted to residents of Arkansas. The registration for the 1950-1951 session was 340, graduates 82. The last session began Sept. 25, 1950, and ended June 11, 1951. The next session will begin Sept. 24, 1951, and will end June 16, 1952. The Dean is Hayden C. Nicholson, M.D.

CALIFORNIA

Loma Linda-Los Angeles

College of Medical Evangelists, Loma Linda; Boyle and Michigan Avenues, Los Angeles 33.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The freshman, sophomore and junior years consist of nine month academic sessions and the senior year will have in addition to the nine month session a seven weeks' clinical clerkship during the summer between the junior and senior years. A twelve month internship in an approved hospital is required. The yearly tuitions including fees are respectively, $1,287.00, $1,275.50, $1,291.25, $1,298.75. The registration for 1950-1951 was 374; graduates 81. The last session for freshman and sophomore students began on Sept. 3, 1950 and ended June 8, 1951 respectively. The junior session began on Sept. 10, 1950 and ended June 8, 1951. The senior session began June 11, 1950 and was completed June 8, 1951. The next session for freshman and sophomore students will begin Sept. 2, 1951, junior students Sept. 8, 1951 and senior students began June 10, 1951 and will end June 6, 1952 for the first three classes and June 7, 1952 for seniors. The President is Walter E. Macpherson, M.D., Los Angeles. The Dean is Harold Shryock, M.D., Loma Linda, and the Associate Dean is Varner J. Johns, M.D., Los Angeles.

Los Angeles

University of Southern California School of Medicine, 3518 University Avenue, Zone 7.—Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1899. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are three years of college work. An internship is required for graduation. Coeducational since organization. Annual fees amount to approximately $750. The registration for 1950-1951 was 272; graduates 67. The last session began Sept. 18, 1950 and ended June 16, 1951. The next session will begin Sept. 17, 1951 and will end June 14, 1952. The Dean is Burrell O. Raulston, M.D.

San Francisco

University of California School of Medicine, Medical Center, San Francisco 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of sixteen weeks each. The fees are $320 per academic year. Nonresidents are charged $250 additional each year. The registration for the 1950-1951 session was 287; graduates 71. The last session began Sept. 11, 1950 and ended June 14, 1951. The next class will begin Sept. 17, 1951 and will end June 19, 1952. The Dean is Francis Scott Smyth, M.D.

Stanford University-San Francisco

Stanford University School of Medicine, University Campus, Stanford University; 2398 Sacramento Street, San Francisco.—The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the city of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is $780. The registration for 1950-1951 was 241; graduates 58. The last session for all classes began Sept. 25, 1950 and ended June 13, 1951. The next session will begin Sept. 24, 1951 and will end June 11, 1952. The Dean is Loren R. Chandler, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are three years of collegiate work. The fees average $525 per academic year. Nonresidents are charged $2,130 additional each year. The registration for 1950-1951 was 301; graduates 69. The last session began Sept. 25, 1950 and ended June 9, 1951. The next session will begin Sept. 24, 1951 and will end June 9, 1952. The Dean is Robert C. Lewis, Ph.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as

had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The requirements for admission are three years collegiate work. The fees average $778 per academic year. The registration for 1950-1951 was 262; graduates 58. The last session began Sept. 20, 1950 and ended June 2, 1951. The next session will commence Sept. 19, 1951 and will end May 31, 1952. The Dean is C. N. Hugh Long, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, N. W., Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of nonveterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $867.00 per academic year. Registration for 1950-1951 was 428; graduates 103. The last session for freshmen started Sept. 18, 1950 and ended May 26, 1951; the sophomore class started Sept. 18, 1950 and ended May 26, 1951; the junior class started Aug. 28, 1950 and ended May 18, 1951 and the senior class started on May 29, 1950 and ended on May 26, 1951. The date of graduation was June 11, 1951. The next session for freshmen and sophomores will begin Sept. 17, 1951 and end May 24, 1952; the juniors will be in session from Aug. 27, 1951 to May 16, 1952; the senior session began May 28, 1951 and will end May 24, 1952. The date of graduation will be June 9, 1952. The Dean is Rev. Paul A. McNally, S.J., Ph.D.

George Washington University School of Medicine, 1335 H Street, N. W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. Three years of college work is required for admission. The fees average $750 for academic year. Registration for 1950-1951 was 338; graduates 72. The last session began Sept. 18, 1950 and ended May 30, 1951. The next session will begin Sept. 17, 1951 and will end on May 28, 1952. The Dean is Walter A. Bloedorn, M.D.

Howard University College of Medicine, 520 W Street, N. W., Washington 1, D. C.—Chartered in 1867. Organized in 1869. The first class was graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The minimum requirements are four years of collegiate work, but practically the bachelor's degree. The course covers four years of thirty-three weeks each. The fees are, respectively: $489; $484; $474; $487. The registration for 1950-1951 was 288; graduates 66. The last session began Sept. 29, 1950 and ended June 8, 1951. The next session will begin Sept. 27, 1951 and will end June 6, 1952. The Dean is Joseph L. Johnson, M.D.

GEORGIA

Atlanta

Emory University School of Medicine.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the School of Medicine of Emory University in 1915. Three years of collegiate work are required for admission. The course of study is four academic years; 36 weeks each in the first and second years; 40 weeks each in the third and fourth years. The fees for each of the four academic years are $800. The registration for 1950-1951 was 281; graduates 66. The last session for freshmen and sophomores began Aug. 31 and Sept. 5, 1950 and ended June 2, 1951. The last session for juniors and seniors began August 1, 1950 and ended June 2, 1951. The next session for freshmen and sophomores will begin Aug. 30 and Sept. 4, 1951 and will end June 7, 1952. The next session for junior and senior classes will begin Aug. 1, 1951 and end on June 7, 1952. The Dean is Hugh Wood, M.D.

Augusta

Medical College of Georgia, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. On January 18, 1950 it became the Medical College of Georgia. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of college work are required for admission. Fees for 1951-1952, $390.00 per academic year for residents of Georgia, nonresidents, $690.00. Only bona fide residents of Georgia admitted (with exception of A. S. T. and V-12 Program students during World War II). The registration for the 1950-1951 session was 308; graduates 74. The next session will begin Sept. 13, 1951 and will end June 2, 1952. The President is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

Chicago Medical School, 710 South Wolcott Ave.—Founded in 1912 as the Chicago Hospital College of Medicine. In 1919 the name of the institution was changed to The Chicago Medical School. The school moved from its former location to its present site in the Medical Center in 1930. The Chicago Medical School is a nonsectarian, coeducational institution. It is chartered in the State of Illinois as a nonprofit institution. A collegiate degree is required for admission. A hospital internship is a requirement for graduation. The yearly tuition and fees are, respectively, $664, $872, $837, $649. The registration for 1950-1951 was 273; graduates 58. The last session for freshmen began Oct. 2, 1950 and for sophomores July 3, 1950 and ended June 16, 1951; the junior and senior session began Oct. 2, 1950 and ended for seniors June 23, 1951. The junior class will end Sept. 22, 1951. The next session for freshmen, juniors and seniors will begin Oct. 1, 1951 and will end June 14, 1952, September 21, 1952 and June 21, 1952, respectively. The sophomore class began July 2, 1951 and will end June 14, 1952. The President is John J. Sheinin, M.D. The Dean of Faculty is F. J. Mullin, Ph.D., and the Dean of Students is A. H. Ryan, M.D.

Northwestern University Medical School, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is three years of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. The total fees are $830 each year. The registration for 1950-1951 was 524; graduates 279. The last session began Sept. 22, 1950 and ended June 11, 1951. The next session will begin Oct. 3, 1951 and will end June 16, 1952. The Dean is Richard H. Young, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue.—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Three years of collegiate work is required for admission. The fees are $675 a year. The registration for 1950-1951 was 343; graduates 79. The last session for freshmen, sophomores and juniors began Sept. 25, 1950 and ended June 23, 1951; the session for seniors began Sept. 25, 1950 and ended June 9, 1951. The next session will begin Sept. 24, 1951 and will end June 21, 1952 for the first three classes and June 7, 1952 for seniors. The Acting Dean is John F. Sheehan, M.D.

University of Chicago, The School of Medicine, Fifty-Eighth Street and Ellis Avenue.—Organied in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College, which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. A special function of the school is to train people for making contributions to the advancement of medical science. The requirements for admission are three years of collegiate work. The curriculum covers twelve quarters of work. The tuition fee averages $800. The registration for 1950-1951 was 277; graduates 57. Quarters begin in March, June, September and December of each year. The Dean of the Division of the Biological Sciences is Lowell T. Coggeshall, M.D. All correspondence pertaining to student affairs, including admission, to Joseph J. Ceithaml, Ph.D., Dean of Students.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average $292 per academic year; nonresidents pay an additional fee of $300. The registration for the 1950-1951 session was 665; graduates, 163. The last session began Sept. 25, 1950 and ended June 23, 1951. The next session will begin Oct. 1, 1951 and will end June 28, 1952. The Dean is Stanley W. Olson, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coedu-

cational since organization. The B.S. degree in anatomy and physiology is conferred. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is $221 for residents of Indiana and $426 for nonresidents. The registration for the 1950-1951 session was 542; graduates, 106. The last session began Sept. 25, 1950 and ended June 18, 1951. The next session will begin Sept. 17, 1951 and will end June 16, 1952. The Dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is $256 each year for residents of Iowa and $566 for nonresidents. The registration for 1950-1951 was 395; graduates 86. The last session began Sept. 21, 1950 and ended June 8, 1951. The next session will begin Sept. 21, 1951 and will end on June 6, 1952. The Chairman of the Executive Committee is Willis M. Fowler, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medicochirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. At present the first year (two semesters and one summer session) is given on the University campus at Lawrence while the remaining three years is given at the Medical Center in Kansas City, Kansas. Coeducational since 1880. The requirement for admission is three years of collegiate work, four years preferred. The fees are $475 per year; the nonresident fees are $925 per year. The registration for 1950-1951 was 363; graduates 84. The last session began June 12, 1950 and ended May 26, 1951. The 1951 freshman class began June 11, 1951 (60) and September 17, 1951 (60). The sophomore class of 1951 was on a staggered basis. The junior and senior classes began June 5, 1951 and will end May 24, 1952. Three-fourths of each junior and senior class is in school each quarter of the school year while one-fourth is on vacation (juniors) or preceptorship (seniors). The Acting Dean is Edward H. Hashinger, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization; became non-segregational in 1951. Three years of collegiate work are the minimum requirements for admission. Tuition is $578 for residents of Louisville and Jefferson County and $678 for nonresidents, per school year, except in the case of new students for whom the tuition is $800 for all residents of Kentucky and $1,200 for out-of-state students. These figures include special fees excepting graduation fee of $10. The registration for 1950-1951 was 372, excluding unclassified and special students; graduates 93. The school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. The last session began Sept. 12, 1950, and ended June 2, 1951. The next session begins on Sept. 10, 1951, and will end on May 31, 1952. The Dean is J. Murray Kinsman, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 12.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session began in October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years' collegiate work is required for admission. Total fees, $120 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1950-1951 was 427; graduates 97. The last session began Sept. 5, 1950 and ended June 2, 1951. The next session will begin Sept. 4, 1951 and end June 2, 1952. The Dean is William W. Frye, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average $800 per academic year. The registration for the 1950-1951 session was 519; graduates 131. The last session began on Sept. 19, 1950 and ended on June 5, 1951. The next session will begin Sept. 17, 1951 and will end May 27, 1952. The Dean is Maxwell E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a medical faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees averaged $829 per academic year. The registration for 1950-1951 was 304; graduates 76. The last session began on Oct. 2, 1950 and ended June 12, 1951. The next session will begin Oct. 1, 1951 and will end June 10, 1952. The Dean is Alan M. Chesney, M.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, 522 W. Lombard Street, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine; Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work are required for admission. The tuition fees average $516 for residents of the state; for nonresidents $250 additional. The registration for 1950-1951 was 386; graduates 96. The last session began Sept. 21, 1950 and ended June 9, 1951. The next session will begin Sept. 20, 1951 and will end June 7, 1952. The Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street, Zone 18.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became non-sectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average $831 per year. The registration for 1950-1951 was 270; graduates 59. The last session for freshmen, sophomores and juniors began Sept. 11, 1950, and ended May 26, 1951. The last senior class began June 12, 1950, and ended June 4, 1951. The present senior class began June 11, 1951, and will end June 2, 1952. All other classes will be enrolled Sept. 10, 1951, and the session will end May 24, 1952. The Dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. Three years of collegiate work is required for admission. The fees average $830. The registration for 1950-1951 was 509; graduates 145. The last session began Sept. 25, 1950 and ended on June 21, 1951. The next session for freshmen, sophomores and juniors will begin Sept. 24, 1951 and will end June 19, 1952. The senior class began on June 4, 1951 and will end June 19, 1952. The Dean is George Packer Berry, M.D.

Tufts College Medical School, 136 Harrison Avenue, Zone 11.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission. Enrollment is generally limited to residents of the New England States. The course covers four years. Total fees for each of the four years are, respectively, $811, $806, $806, $816. The registration for 1950-1951 was 407; graduates 95. The last session for freshmen, sophomores and juniors began Sept. 20, 1950; for seniors June 12, 1950, and all classes ended June 10, 1951. The present session began for the seniors on June 11, 1951 and for the other classes will begin Sept. 19, 1951, and will end June 8, 1952. The Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed 1915. Coeducational since 1870. The entrance requirements are three years of collegiate work. The fees average $290 per academic year; nonresidents $550 a year. The registration for 1950-1951 was 544; graduates 113. The last session began Sept. 25, 1950 and ended June 16, 1951. The next session will begin Sept. 24, 1951 and will end June 14, 1952. The Dean is A. C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1512 St. Antoine Street, Zone 26.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is three years in an accredited college or university. Until further notice, enrollment is limited to residents of the State of Michigan. The fees average $525 for the school year. The registration for 1950-1951 was 258; graduates 62. The last session began Sept. 11, 1950, and ended June 9, 1951. The next session will begin Sept. 10, 1951, and will end June 7, 1952. The Dean is Gordon H. Scott, Ph.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work or of public health work has been completed. Total fees are $326.73 per academic year for residents and $659.23 for nonresidents. The registration for 1950-1951 was 479; graduates, 113. The last session began Oct. 2, 1950 and ended July 28, 1951. The next session will begin Oct. 1, 1951 and will end July 26, 1952. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks; in the senior year the spring quarter is 11 weeks in length and graduation is in June. The Dean of Medical Sciences is Harold S. Diehl, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. Completion of 3 years of college study is minimum admission requirement, but students presenting meritorious credits in excess of minimum are accepted by preference. The fees average $814 per year. The registration for 1950-1951 was 475; graduates 110. The last session began Sept. 19, 1950 and ended June 1, 1951. The next session will begin Sept. 18, 1951 and will end June 1, 1952. The Dean is Melvin A. Casberg, M.D.

Washington University School of Medicine, Kingshighway and Euclid Avenue, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work is required for admission. The fees average $800. The registration for 1950-1951 was 377; graduates 100. The last session began on Sept. 11, 1950 and ended June 2, 1951. The next session will begin on Sept. 17, 1951 and will end on June 11, 1952. The Dean is Robert A. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 302 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title 1921. Coeducational since organization. Three years of collegiate work is required for admission. The tuition fees average $800 per academic year. The registration for 1950-1951 was 293; graduates 74. The last session began Sept. 22, 1950 and ended May 31, 1951. The next session will begin Sept. 18, 1951 and will end June 5, 1952. The Dean is F. G. Gillick, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. The University of Nebraska College of Medicine was established in Lincoln in 1883, and in 1902 the Omaha Medical College became a part of the University of Nebraska and has continued with the present title College of Medicine, University of Nebraska. The instruction of the first two years was given at Lincoln and of the last two years at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average $450 per academic year; nonresidents are charged $610. The registration for 1950-1951 was 336; graduates 82. The last session for seniors began Sept. 11, 1950, and ended May 26, 1951. The last session for freshmen, sophomores and juniors began Sept. 11, 1950, and ended June 2, 1951. The next session will begin Sept. 15, 1951, and will end June 27, 1952. The Dean is Harold C. Lueth, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average $775 per academic year. The registration for 1950-1951 was 193; graduates 39. The last session began on Sept. 25, 1950 for the freshmen and sophomores and ended on June 16, 1951; the last session for the juniors began on Sept. 11, 1950 and ended on May 19, 1951, and for the seniors the last session began June 1, 1950 and ended May 31, 1951. The present senior year began on June 1, 1951 and will end May 31, 1952. The next session for the freshmen, sophomores and juniors will begin on Sept. 10, 1951 and will end on May 29, 1952. The Dean is James Allan Campbell, M.D.

Brooklyn

State University of New York, College of Medicine at New York City, 350 Henry Street, Zone 2.—Originally organized in 1858 as the collegiate department of The Long Island College Hospital. The first class was graduated in 1860 and the last class in 1930. Was chartered in 1930 as Long Island College of Medicine with the first class graduated in 1931 and the last in 1949. It was merged with the State University of New York on April 5, 1950, and the first class under the University was graduated in June 1950. It is coeducational. Three years of collegiate work, including specified courses, are required for admission. The fees are $715 per academic year. The registration for 1950-1951 was 494; graduates 96. The last session for seniors began Sept. 11, 1950 and ended June 2, 1951. The last session for freshmen, sophomores and juniors began on Sept. 18, 1950 and ended on June 9, 1951. The next session begins for freshmen, sophomores and juniors on Sept. 17, 1951 and ends June 7, 1952. For seniors the next session will begin Sept. 10, 1951 and will end May 31, 1952. The Dean is Jean A. Curran, M.D.

Buffalo

University of Buffalo School of Medicine, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is four years of collegiate work including certain prescribed science subjects. The fees average $828. The registration for 1950-1951 was 267; graduates 64. The last session began Sept. 25, 1950 and ended June 16, 1951 for freshmen, sophomores and juniors, and on June 9, 1951 for seniors. The next session will begin Sept. 24, 1951 and end June 14, 1952 for freshmen, sophomores and juniors, and will begin Sept. 4, 1951 and end June 7, 1952 for seniors. The Dean is Stockton Kimball, M.D.

New York

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average $800 per academic year. The registration for 1950-1951 was 457; graduates 109. The last session began on June 5, 1950 and June 1, 1950 for juniors and seniors, respectively; and ended on June 2, 1951. The last session for freshmen and sophomores began on Sept 11, 1950 and ended June 2, 1951. The present session began on June 4, 1951 for the juniors and seniors and will end May 31, 1952, and will begin on Sept. 17, 1951 for the freshmen and sophomores and will end May 31, 1952. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. All students matriculated must be graduates of approved colleges or scientific schools or seniors *in absentia* who will receive the bachelor degree from their college on successful completion of the first year of the medical course. The fees average $825 a year. The registration for 1950-1951 was 335; graduates 87. The last session began for senior students July 10, 1950 and ended June 12, 1951. The freshmen, sophomore and junior classes began Sept. 14, 1951 and ended June 12, 1952. The present session for seniors began on July 9, 1951, and will begin for the remaining three classes on Sept. 13, 1951, and all classes will end June 11, 1952. The Dean is Joseph C. Hinsey, Ph.D.; Assistant Dean, Lawrence W. Hanlon, M.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street, New York 29.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Three years of college work is the minimum requirement for admission but a degree is preferred. The fees average $750 per academic year. The registration for 1950-1951 was 480; graduates 112. The last session began Sept. 18, 1950 and ended June 6, 1951. The next session will begin Sept. 17, 1951 and will end June 4, 1952. The President and Dean is J. A. W. Hetrick, M.D.

New York University College of Medicine, 477 First Avenue, Zone 16.—This is the undergraduate medical college of the New York University-Bellevue Medical Center which comprises also the Post-Graduate Medical School and the University Hospital.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. In 1947 the charter of the University and the statutes were amended, establishing the New York University-Bellevue Medical Center, which includes the College of Medicine. Coeducational since 1919. Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences. The fees average $800 per academic session. The registration for 1950-1951 was 488; graduates 119. The

last session began Sept. 18, 1950 for freshmen, sophomores, juniors and seniors and ended May 19, 1951 for freshmen, sophomores, and June 9th for juniors and May 12th for seniors. The next session begins Sept. 24, 1951 for all classes and ends May 24, 1952 for freshmen and sophomores, June 14, 1952 for juniors and May 17, 1952 for seniors. The Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 7.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $600 per academic year. The registration for 1950-1951 was 280; graduates 66. The last session began Sept. 18, 1950 and ended June 9, 1951. The next session will begin on Sept. 17, 1951 and will end on June 7, 1952. The Dean is George H. Whipple, M.D.

Syracuse

State University of New York at Syracuse, College of Medicine, 766 Irving Avenue, Zone 10.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Assumed title Syracuse University College of Medicine in 1875, when a compulsory three year graded course was established. The College of Medicine was merged with the State University of New York on June 26, 1950 when the present title was assumed. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. Three years of a recognized college course are required for admission. The fees average $800 per academic year. The registration for 1950-1951 was 232; graduates 48. The last session began Sept. 5, 1950 and ended June 4, 1951. The next session for all classes will begin Sept. 4, 1951 and end June 2, 1952. The Dean is William R. Willard, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of two semesters in the first year and three quarters each in the sophorome, junior and senior years. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. This accelerated schedule is optional, and students may take the two semesters of their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the curriculum committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are $750 for three quarters. The registration for 1950-1951 was 310; graduates 76. During 1951 the quarters begin Jan. 3, March 27, July 2, Oct. 1, and end March 17, June 9, Sept. 15 and Dec. 15. The next freshman class will be enrolled Oct. 1, 1951 and will end June 7, 1952. The Dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Three years of college work are required for admission. Clinical departments operate four quarters in the year; however, the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research, for study elsewhere, or for earning money to help defray expenses for their education. Tuition is $750 per school year. The registration for 1950-1951 was 222; graduates 61. The last session for the freshman class began Oct. 2, 1950; sophomores, Oct. 2, 1950; juniors and seniors, July 10, 1950, and ended for freshmen, sophomores, juniors, and seniors on June 9, 1951. The present junior and senior classes began July 9, 1951, and will end June 14, 1952. The next freshman and sophomore classes will begin Oct. 1, 1951, and will end June 14, 1952. The Dean is C. C. Carpenter, M.D., and the Associate Dean is Frank R. Lock, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Three years of collegiate work are required for admission. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program. The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year. Tuition is as follows: for legal residents of Cincinnati $575 a year plus breakage fees ($125 additional for those not legal residents). The registration for 1950-1951 was 350; graduates 84. The last session for freshmen, sophomores, juniors and seniors began Sept. 25, 1950 and ended June 2, 1951. The next session for juniors and seniors will begin Sept. 6, 1951 and for freshman and sophomores will begin Sept. 24, 1951 and will end May 31, 1952. The Dean is Stanley Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission; four years preferred. The fees average $800 per academic year. The registration for 1950-1951 was 324; graduates 76. The last session began Sept. 20, 1950, for freshmen and sophomores, and ended June 9, 1951. For juniors the last session began Sept. 13, 1950, and ended June 2, 1951. For seniors the last session began Aug. 28, 1950, and ended June 13, 1951. The next session for freshmen and sophomores will begin Sept. 19, 1951, and will end May 31, 1952. For juniors the session dates will be Sept. 12, 1951 to May 31, 1952; and for seniors from Aug. 27, 1951 to June 11, 1952. The Dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues, Zone 10.—The present College of Medicine became a part of The Ohio State University in 1914. It incorporates all the previous medical college interests in central Ohio, standing upon a foundation of six medical schools: The Medical Department of Willoughby University of Lake Erie, 1834-1846; The Willoughby Medical College of Columbus, 1846-1847; The Starling Medical College, 1847-1907; the Columbus Medical College, 1875-1892; The Ohio Medical University, 1892-1907; Starling-Ohio Medical College 1907-1914. Graduates of these colleges by action of the Board of Trustees are considered alumni of The Ohio State University. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average $480 per academic year and $225 additional for nonresidents. The registration for 1950-1951 was 396; graduates 76. The last session began on Oct. 3, 1950 and ended June 8, 1951. The next session will begin Oct. 2, 1951, and end June 6, 1952. The Dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 800 North East Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years—90 semester hours. The fees for residents of Oklahoma are $350; nonresidents, $700. The registration for 1950-1951 was 280; graduates 65. The last session began Sept. 18, 1950 and ended June 4, 1951. The next session will begin Sept. 17, 1951 and will end June 2, 1952 for the first three classes. The senior session began June 18, 1951 and will end June 2, 1952. The Dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School, 3181 S. W. Sam Jackson Park Road, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are $450 a year for residents of Oregon and $180 a year additional for nonresidents, plus a breakage deposit of $15 a year for the first two years and $10 a year for the last two years. The registration for 1950-1951 was 291; graduates 71. The last session began Oct. 2, 1950 and ended June 15, 1951. The next session will begin Oct. 1, 1951 and will end June 13, 1952. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2.—Formed by the successive union of several institutions. The Washington Medical College of Philadelphia was chartered in 1853, changed its name to The Hahnemann Medical College of Philadelphia in 1867, and in 1869 absorbed the Homeopathic Medical College of Pennsylvania (founded in Philadelphia 1848). It assumed its present name in 1885. The first class graduated in 1849. Coeducational since 1941. A minimum of three years of collegiate work in an approved college of arts and sciences is required for admission. Fees for 1951-1952 sessions are respectively for the first year, second year, third year and fourth year classes $750, $750, $750 and $775. The registration for 1950-1951 was 347; graduates 77. The last session began for all students Sept. 11, 1950 and ended for the first and second year classes on June 2, 1951; for third year class June 8, 1951 and for the fourth year class on June 14, 1951. The next session for all classes will begin Sept. 10, 1951 and will end for the first and second year classes June 7, 1952; for the third year class June 13, 1952 and for the fourth year class June 19, 1952. The Dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning in 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the board of trustees. For the class entering in 1951 the minimum entrance requirement will be three years of college work. The tuition fee is $700 a year. The registration for 1950-1951 was 649; graduates 161. The last session began for all classes on Sept. 11, 1950 and ended for freshmen on June 7, 1951 and for sophomores on June 9, 1951, for juniors and seniors on June 6, 1951. Graduation was June 15, 1951. The next session will begin for freshmen and sophomores on Sept. 10, 1951, for juniors and seniors on Aug. 27, 1951. The Dean is George Allen Bennett, M.D.

Temple University School of Medicine, 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average $800 per academic year. The registration for 1950-1951 was 500; graduates 123. The last session began Sept. 11, 1950, and ended June 14, 1951. The next session will begin Sept. 10, 1951, and will end June 28, 1952. The Dean is William N. Parkinson, M.D.

University of Pennsylvania School of Medicine, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916, it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work is required for admission. The tuition fee is $800, with a deposit fee of $15, a general fee including student health of $20 and a matriculation fee of $5. The registration for 1950-1951 was 504; graduates 129. The last session began Sept. 25, 1950 and ended June 13, 1951. The next session will begin Sept. 10, 1951 and will end June 11, 1952. The Dean is John McK. Mitchell, M.D.

Woman's Medical College of Pennsylvania, Henry Avenue and Abbottsford Road, Zone 29.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers three years of thirty-six weeks each and one year of forty weeks. Total fees are $810 yearly. The registration for 1950-1951 was 186; graduates 39. The last session began Sept. 11, 1950 and ended June 12, 1951. The next session will begin Aug. 6, 1951 for fourth year and Sept. 13 for all others and will end June 12, 1952. The Dean is Marion Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. Entrance requirements are three years of collegiate work. The total fees are $700 each year. The registration for 1950-1951 was 366; graduates 80. The last session began Sept. 11, 1950 and ended June 13, 1951. The next session will begin on Sept. 10, 1951 and will end June 11, 1952. The Dean is William S. McElroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of the State of South Carolina, 16 Lucas Street, Zone 16.—Organized 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average $425 each year for residents of South Carolina and $1,500 for nonresidents of the state. The registration for 1950-1951 was 233; graduates 57. The last session began on Sept. 28, 1950 and ended June 7, 1951. The next session will begin on Sept. 27, 1951 and will end June 5, 1952. The President is Kenneth M. Lynch, M.D., and the Dean is John T. Cuttino, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 847 Union Avenue, Zone 3.—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Two years of collegiate work are required for admission. The B.S. degree is conferred on students completing the science-medical curiculum of the University. The fees are $175 quarterly. For residents of the state the charge is reduced $50 each quarter. The registration for 1950-1951 was 588; graduates 150. During the next academic year the quarters begin September, January, March and July. The Dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth).—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Two years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year $530; second year $515; third year $495; fourth year $510. The curriculum covers four academic years of thirty-four weeks each. In September 1942, Meharry Medical College instituted the quarter system. The registration for 1950-1951 was 245; graduates 56. The last session began on Sept. 25, 1950 and ended on June 2, 1951. The next session begins on Sept. 24, 1951 and will end on June 6, 1952. The Chairman of the Interim Committee is Robert A. Lambert, M.D.; the Dean is Michael J. Bent, M.D.

Vanderbilt University School of Medicine, Twenty-First Avenue South at Edgehill, Zone 4.—The school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years of nearly nine months each. The fees average $813 per academic year. The registration for 1950-1951 was 205; graduates 54. The last session began Sept. 25, 1950 and ended June 10, 1951. The next session will begin Sept. 24, 1951 and will end June 8, 1952. The Dean is John B. Youmans, M.D.

TEXAS

Dallas

Southwestern Medical School of the University of Texas, 2211 Oak Lawn.—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. Became a branch of the University of Texas, Sept. 1, 1949. The medical college is operated on the regular program offering three terms of twelve weeks each per academic year. The tuition fees for residents average $125 per year. The nonresident fee is $250 per year. Three years of college work are required for admission. The registration for 1950-1951 was 342; graduates 65. The last session began Sept. 6, 1950, and ended June 5, 1951. The next session will begin Sept. 4, 1951, and will end June 3, 1952. Executive Officer: James Pinckney Hart, Chancellor, University of Texas.

Galveston

University of Texas School of Medicine, 900 Strand.—Organized in 1890. The first class graduated in 1892. Coeducational since organization. Baccalaureate degree (B.A. or B.S.) will be required beginning with freshman class of September, 1952, provided military situation makes this possible. A few outstanding students with only three years of work may be accepted at the discretion of the Admission Committee. The fees average $113 per academic year, including health fees for medical care and hospitalization. The registration for 1950-1951 was 495; graduates 96. The last session began on Sept. 12, 1950 and ended June 2, 1951. The next freshman class will matriculate Sept. 18, 1951, and the sophomore, junior, and senior classes will matriculate on Sept. 24; all classes will end June 7, 1952. The Vice-President is Chauncey D. Leake, Ph.D., and D. Bailey Calvin, Ph.D. is Dean of Student and Curricular Affairs.

Houston

Baylor University College of Medicine, Texas Medical Center.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are respectively $656, $646, $631, $656. The registration for 1950-1951 was 351; graduates 78. The last session began Oct. 2, 1950 and ended June 11, 1951. The next session will begin Oct. 1, 1951 and will end June 9, 1952. The Dean is W. H. Moursund, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine.—Organized in 1905. Coeducational since organization. Four-year curriculum established March, 1943. Three years of collegiate work are required for admission. The next freshman class will be admitted in September, 1951. All subsequent freshman classes will begin in September of each year. Classes are scheduled during three academic quarters (12 weeks) each calendar year. Applications for admission (complete) must be submitted 9 months prior to opening date. The fees for each quarter average $455 (resident); there is a non-resident fee of $50 each quarter. The registration for 1950-1951 was 202; graduates 49. The next session for freshmen will begin Sept. 24, 1951 and will end in June, 1952. The present session for sophomores began March, 1951 and will end March, 1952. The present session for juniors began Jan., 1951 and will end August, 1952 and December, 1952. The next session for seniors will begin Sept., 1952 and Jan., 1953. The Dean is John Z. Bowers, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. Three years of college work are required for

admission. For residents of Vermont the tuition fee averages $550 per session. Nonresidents are charged an additional $150 each session. A $25 fee is charged for the doctor's degree. Registration for 1950-1951 was 168; graduates 38. The last session for freshmen, sophomores and juniors began Sept. 9, 1950 and ended June 10, 1951. The last senior class began July 5, 1950 and graduated June 10, 1951. The present senior class began June 25, 1951; the next freshman, sophomore and junior classes will begin Sept. 8, 1951 and all classes will end June 15, 1952. The Dean is William Eustis Brown, M.D.

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the tuition and other required fees are $459 per academic year; for nonresidents, $859. The registration for 1950-1951 was 288; graduates 71. The last session began Sept. 18, 1950 and ended June 11, 1951. The next session will begin Sept. 17, 1951 and will end June 9, 1952. The Dean is Vernon W. Lippard, M.D.

Richmond

Medical College of Virginia, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. Three years of collegiate work, as a minimum, are required for admission. Preference, however, is given to applicants with a baccalaureate degree. Fees average $510 per academic year. Nonresidents are charged an additional $325 each year. The registration for 1950-1951 was 363; graduates 95. The last session began Sept. 11, 1950 for second, third and fourth year classes and ended June 5, 1951. The last session for the first year class began Sept. 7, 1950 and ended June 5, 1951. The subsequent session will begin Sept. 6, 1951 for the first year class and Sept. 10, 1951 for the second, third and fourth year classes and will end June 3, 1952. The Dean is John B. Truslow, M.D. The Associate Dean and Chairman of the Admissions Committee is Mr. George W. Bakeman.

WASHINGTON

Seattle

University of Washington School of Medicine, Seattle 5.—Established by the Legislature in 1945 and organized as one of the professional schools in the Division of Health Sciences of the University of Washington in 1946. The first class graduated in 1950. Coeducational. The minimum requirement for admission is three years of collegiate work. Tuition fees are $363 each year for residents of Washington and Alaska and $558 for nonresidents of these areas. Registration for 1950-1951 was 242; graduates 48. The first three classes were limited to 50 students but with the class entering in 1949 this number was raised to 75. The last session began Sept. 27, 1950 and ended June 9, 1951. The next session will begin Sept. 24, 1951 and will end June 14, 1952. The Dean is Edward L. Turner, M.D.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue, Zone 6.—Organized 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. The entrance requirement is three years of collegiate work. Fees for the first, second and third years $280, for the fourth year $190 per academic year for residents. An additional fee of $300 per year is charged nonresidents. Registration for 1950-1951 was 312; graduates 71. The last session for freshman, sophomore and junior students began Sept. 18, 1950 and ended June 15, 1951. The last senior class began June 26, 1950 and ended June 15, 1951. Freshman, sophomore and junior classes will begin Sept. 24, 1951 and will end June 20, 1952. The senior class began June 25, 1951 and will end June 20, 1952. The Dean is William S. Middleton, M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $750 per academic year. The registration for the 1950-1951 session was 372; graduates 87. The last session began Sept. 25, 1950 and ended June 3, 1951. The last senior class began June 12, 1950 and ended June 9, 1951. The next session for freshman, sophomore, and junior students will begin Sept. 10, 1951 and will end May 31, 1952. The 1951-1952 session for seniors began June 11, 1951 and will end June 7, 1952. The Dean is John S. Hirschboeck, M.D.

APPROVED MEDICAL SCHOOLS IN CANADA

CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. New course—three years premedical, four years of medicine—offered with the session 1947-1948. Tuition for the first and second years is $425 per session, and for the third and fourth years is $450 per session. The registration for 1950-1951 was 216; graduates 57. The last session began Sept. 5, 1950, and ended April 30, 1951. The next regular session will begin Sept. 4, 1951, and end April 30, 1952. The Dean is John W. Scott, M.D.

Manitoba

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include three years of collegiate work in the faculty of arts and sciences of a recognized university. The course extends over four years of eight months each and a hospital internship. The fees average $445.25 yearly. The registration for 1950-1951 was 294; graduates 67. The last session began Sept. 11, 1950 and ended May 15, 1951. The next session will begin on Sept. 17, 1951 and will end on May 15, 1952. The Dean is Lennox G. Bell, M.D.

Nova Scotia

Dalhousie University Faculty of Medicine, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average $410 yearly; nonresidents $250 additional fee. The last session for freshmen, sophomores and juniors began Sept. 5, 1950 and for seniors May 8, 1950; all classes ended May 15, 1951. The registration for 1950-1951 was 221; graduates 55. The next session for all classes will begin Sept. 5, 1951 and will end May 13, 1952. The Dean is H. G. Grant, M.D.

Ontario

Queen's University Faculty of Medicine, Kingston.—Organized in 1852. First class graduated in 1855 and a class graduated each subsequent year. The course consists of six sessions of thirty teaching weeks, the sixth session being devoted entirely to clinical work in the hospitals affiliated with the University. The latter is not considered an internship. Fees for each of the six years amounts to $413.75. The degrees awarded are M.D., C.M. Freshmen will be admitted annually. Registration for 1950-1951 was 347; graduates 52. The last session began Sept. 18, 1950, and ended May 12, 1951. The next session will begin Sept. 17, 1951, and will end May 10, 1952. The last Convocation was held June 2, 1951. The Dean is G. Harold Ettinger, M.D. The Secretary of the Faculty of Medicine is H. D. McEwen, Ph.D.

University of Ottawa Faculty of Medicine.—Organized in September 1945. The degree of M.D. is conferred after 1 year premedical studies, 4 years medicine and 1 year of internship. The minimum acadmic requirements for admission to the premedical year are the Ontario Grade XIII Honour Matriculation, or equivalent certificates. Students who have obtained their bachelor degree in arts or in science and who have completed the required courses in biology, chemistry and physics may be admitted to the First Year of Medicine. An internship is required for graduation. The registration for 1950-1951 in the medical and premedical years was 250; graduates 43. The next session for the premedical year will begin on Sept. 14, 1951 and for first, second, third and fourth medical years on Sept. 11. The session for the premedical year will end in May 1952 and for the medical years in June 1952. Students graduate in May. The Dean is A. L. Richard, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honor college years of nine months each and four years of nine months each in the Faculty of Medicine. The total fees to residents of Canada for the last four years are $515 a year. The registration for 1950-1951 was 243; graduates 61. The last session began Sept. 11, 1950 and ended May 24, 1951. The next session begins Sept. 10, 1951 and ends May 22, 1952. The Dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, Toronto 5.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Re-established in 1887. In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The degree of M.D. is conferred after 4 years in the study of medicine. Admission to the medical course is gained following honour matriculation and after two years in the study of premedical requisites in the University of Toronto. A certain number are admitted each year to the first medical year who hold arts degrees from recognized universities and who have covered the necessary work

in the humanities and sciences. The B.Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree, or under certain circumstances for an extra year's work as an undergraduate. The registration for 1950-1951 in the medical and premedical years was 964; graduates 174. The next session for first and second premedical years will begin on Sept. 26, 1951 and for first, second, third and fourth medical years on Sept. 24, 1951. The session for premedical years will end on April 26, 1952 and for medical years on May 17, 1952. Students will graduate annually in June. The Dean is J. A. MacFarlane, M.B.

Quebec

McGill University Faculty of Medicine, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1917. Three years of collegiate work are required for admission. The total fees for each of the four medical years are $525. The registration for 1950-1951 was 457; graduates 115. The last session began Sept. 6, 1950 and ended June 2, 1951 for the first three classes and April 28, 1951 for the senior class. The next session will begin Sept. 5, 1951 and will end May 31, 1952, for the first three classes and April 26, 1952 for the seniors. The Dean is C. Lyman Duff, M.D.

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The requirements for admission are: B.A. degree (or its equivalent), with a supplementary year in the Faculty of Pure Science (or an entrance examination on the Premedical subjects). An internship is required for graduation. The fees are $390 yearly for residents, and $465 yearly for nonresidents. The registration for 1950-1951 was 398; graduates 92. The last session began Sept. 18, 1950, and ended May 12, 1951. The next session will begin Sept. 11, 1951 and will end May 3, 1952. The Dean is Wilbrod Bonin, M.D.

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The fees for each of the medical years average $300 for residents of Canada. Nonresidents are charged an extra fee of $200 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1950-1951 was 626; graduates 141. The last session began Sept. 13, 1950 and ended June 1, 1951. The next session will begin Sept. 12, 1951 and will end June 1, 1952. The Dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work or ninety semester hours of credit. Fees average $410.50 annually. There is a nonresident fee of $200. The school operates on an accelerated program by accepting two freshman classes each session. The registration for 1950-1951 was 122. The last session began July 31, 1950 and ended May 12, 1951. Additional freshman class was admitted Jan. 29, 1951 and will end Oct. 27, 1951. The sophomore session began July 10, 1950 and ended March 17, 1951. An additional sophomore session began Nov. 21, 1950 and ended July 28, 1951. The present freshman class began July 16, 1951, and will end April 30, 1952. The present sophomore class began June 11, 1951 and will end Feb. 23, 1952. The Dean is David Schultz Pankratz, M.D.

MISSOURI

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $236.50, for the second year $222.50. The registration for 1950-1951 was 89. The last session began Sept. 18, 1950 and ended June 8, 1951. The next session will begin Sept. 11, 1951 and will end June 5, 1952. The Dean is Trawick H. Stubbs, M.D.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the Trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A.B. degree in Dartmouth College may substitute the work or the first year in medicine for that of the senior year. The tuition is $800 for each year. The registration for 1950-1951 was 49. The last session began on Sept. 24, 1950 and ended June 17, 1951. The next session will begin Sept. 23, 1951 and will end June 8, 1952. The Dean is Rolf C. Syvertsen, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. Certificates are awarded on the completion of two years' work in medicine. The tuition is $660 per year for residents; for nonresidents an additional $600 per year. The registration for 1950-1951 was 117. The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years. The full program will probably not get under way for a year or two. The last session began Sept. 18, 1950, and ended June 4, 1951. The next session will begin Sept. 17, 1951, and end on June 2, 1952. The Dean is W. Reece Berryhill, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The fees are $121.50 each year for resident students and $206.50 for nonresidents. The registration, academic year 1950-1951, was 65. The last session began Sept. 18, 1950 and ended June 4, 1951. The next session will begin Sept. 24, 1951 and will end June 10, 1952. The Dean is W. F. Potter, M.D.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B. degree.: The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The tuition is $303 for the first year residents and $303 for second year residents; $513 for first year nonresidents, and $513 for second year nonresidents. Registration for 1950-1951 was 63. The last session began Sept. 4, 1950 and ended June 7, 1951. The next session for first and second year students will commence Sept. 3, 1951 and will end June 6, 1952 for first year students and will end Aug. 15, 1952 for second year students. (There is a thirteen day break between the end of the didactic year for second year students and the four weeks of clerkship and month of clinical teaching at the Veterans Administration Hospital in Sioux Falls, South Dakota.) The Dean is Donald Slaughter, M.D.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1912. Gives the first two years of the medical course, but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. Fees for residents of the state are, respectively, $258 and $268; nonresidents, $150 additional each year. The registration for 1950-1951 was 56. The last session began Sept. 18, 1950 and ended June 4, 1951. The next session will begin Sept. 17, 1951 and will end June 2, 1952. The Dean is Edward J. Van Liere, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN CANADA

Saskatchewan

University of Saskatchewan School of Medical Sciences, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Two years of university premedical work is required for admission. The B.A. degree is conferred at the end of the second year. The fees are $380. The registration for 1950-1951 was 62. The last session for freshmen began Sept. 19, 1950 and ended June 22, 1951. The next session will begin Sept. 24, 1951 and will end June 21, 1952. The Dean is W. Stewart Lindsay, M.B.

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FIFTY-FIRST ANNUAL REPORT ON MEDICAL EDUCATION

The fifty-first annual report of the Council on Medical Education and Hospitals which appears in this issue of THE JOURNAL summarizes basic data concerning medical schools and students in the United States and Canada and presents information and statistics on many subjects of current importance.

Last year's prediction that the freshman class might reach 7,500 within a few years already appears close to realization. The 1950 freshman class totaled 7,182 students and the 1951 freshman class will number approximately 7,400. The total student enrolment of 26,191 exceeds last year's total by more than 1,000 and exceeds the total for 1940-1941, the last pre-war year, by almost 5,000. The full magnitude of this expansion in the capacity of the medical schools may be appreciated when it is realized that it is equivalent to the establishment of 15 new medical schools of average size. These growing enrolments are reflected in the increasing size of the graduating classes. This year's graduating class totaled 6,135, and by 1953 the number of graduates will almost certainly exceed even the peak of 6,389, reached in 1947 under the accelerated program when several schools graduated more than one class.

The report reveals a trend which may indicate a decrease in the general level of competence of incoming medical students. In the 1950 freshman class, the number of C students was 20%, as compared with 10% for the preceding year. The most likely explanation for this trend is that the large backlog of veterans whose education was delayed by the war has largely disappeared. While the schools can no longer draw from such an unusually large pool of able students as was available immediately after the war, there were still slightly more than three applicants for each opening in last year's freshman class.

In recent years the report of the Council has repeatedly called attention to the large number of students in addition to regular undergraduate medical students who receive part or all of their instruction from the faculties of the medical schools. This year figures were obtained which indicate for the first time the full magnitude of this additional load. During 1950-1951 the medical schools provided instruction for more than 57,000 students in addition to their undergraduate medical students. These additional students fall into many categories, ranging from students in technical schools and undergraduate courses to advanced graduate students and practicing physicians. It is clear that, through the education it provides these students, a medical school makes a major contribution to a university's total program of education, a contribution that is not always recognized.

Events of the past year have not yet made clear what the full effect of the present international crisis and the attendant partial mobilization will be on medical education. The Joint Committee on Medical Education in Time of National Emergency has been active in studying this problem and in preparing plans for various contingencies. In the fall of 1950 the Committee published a statement setting forth in detail its recommendations with respect to the conduct of medical education in a national emergency. Early in the present year it prepared and circulated to the medical schools a pamphlet containing suggestions for supplementing the curriculum so as to prepare students to deal effectively with problems of civil defense and military medicine. The committee has also been active in making recommendations with respect to the problem of insuring a continuing flow of medical students and medical graduates under a program of selective service or a program of universal military training and service. One result of partial mobilization is already clear. As long as the needs of the armed forces for physicians continue at their present levels, most able-bodied male graduates will have to interrupt their training at the end of one year of internship for a period of active military duty.

Another, although indirect, effect of the current emergency was the decision of the Committee for the Survey of Medical Education that it would not be feasible to visit all medical schools as had been planned when the survey was initiated. The survey completed its second year of field work in the spring of this year, at which time 41 of the 79 medical schools and schools of the basic medical sciences had been visited. Recognizing that partial mobilization has resulted in increasing demands on the medical schools and recognizing that the schools individually and collectively are faced with urgent decisions on a number of policies, the committee believed that it could render more service to the medical schools and the public by preparing an early report of its findings to date than by continuing its field work. The committee is now addressing its full energy to the preparation of its report, which it is hoped will be published and ready for distribution by the spring of 1952.

Although fewer vacancies on teaching staffs are reported this year than last year, medical schools are still experiencing some difficulty in recruiting teachers. The total number of vacant full-time positions as of June 1951 was 235 as compared with 281 in 1950 and 441 in 1949. This continuing shortage of teachers underlines the importance of maintaining an adequate flow of graduate students in both the basic and clinical sciences even in the event of more extensive mobilization than that now in effect. The need for continuing to train an adequate force of teachers is particularly important in view of the further expansion contemplated by several exist-

ing schools and the probability that several new medical schools will be established within the next few years.

The report presents further evidence of interest on the part of medical schools in preparing students and recent graduates to serve as family physicians or general practitioners. Fifty-four schools are sponsoring one or more programs designed to interest and prepare students for careers in general practice. Among these are several that report that their entire educational program has been designed with the primary purpose of preparing students adequately for general practice.

For the first time since the end of World War II, a reduction in attendance at postgraduate and continuation courses is reported. Although the number of courses offered increased by more than 10%, attendance during 1950-1951 dropped by more than 20,000, or almost 30%, below the preceding year. The explanation for this drop is not yet clear. It may be due in part to the increased number of physicians entering military service on the one hand, or to the fact that the demand for refresher courses by medical officers who served during World War II has been met on the other hand. The reduction in attendance, of course, must also raise the question as to whether postgraduate courses are being planned in a manner calculated to arouse the interest and satisfy the needs of the practicing physician.

PROGRESS IN THE FINANCIAL SUPPORT OF MEDICAL SCHOOLS

The annual report on medical education published in this issue of THE JOURNAL reveals that the medical schools are making substantial progress in their struggle to secure more adequate financial support. For the coming academic year they report that their budgets will total $74,350,000 and that they expect to receive an additional $35,250,000 from outside agencies in grants for research and special teaching activities. The schools thus will have a total of $109,600,000 available for education and research during the coming year.

Earlier this year the Committee on Medical School Grants and Finances appointed by the Surgeon General of the Public Health Service published a report of the study it made of the expenditures and the needs of the medical schools during the academic year 1947-1948. The committee reported that in that year the medical schools spent a total of $70,551,000 for basic operations and for separately budgeted research. This figure did not include the expense of maintaining clinical facilities. Of the total of $109,600,000 available to the schools for the coming year, about $3,250,000 will be used to support clinical facilities. This amount must be subtracted from the total to provide a figure that can be compared with the total expenditure as computed by the committee. When this is done it is seen that the medical schools expect to have available in 1951-1952 approximately 36 million dollars more than they spent in 1947-1948.

It is of interest to compare this figure with the estimate of the Surgeon General's Committee that the medical school's unmet needs as of 1947-1948 could be financed only by the expenditure of about 40 million dollars more annually than the schools were then spending for education and research. In presenting this estimate the committee suggested that the figure of 40 million dollars should perhaps be discounted in part as representing wishes and aspirations. The committee further stated that the schools could not absorb an additional 40 million dollars a year immediately but that that figure was a general measure of the level to which operating expenditures of the medical schools should rise in a period of years.

It should be pointed out that not all the increase of 36 million dollars in the past four years is clear gain and that not all schools have shared proportionately. Part of the increase has been offset by the loss in the purchasing power of the dollar; some of it has been used to support new or expanded activities not provided for in the estimate of 40 million dollars. Account must also be taken of the fact that almost 40% of the gain of 36 million dollars is in the form of funds specifically earmarked for research and therefore not available for the schools' unrestricted use.

The over-all picture, however, is one which warrants optimism that progress is being made even if unmet needs and some uncertainty regarding the future remain. It is perhaps trite to comment that it is unlikely the time will ever come when all needs will have been met and all uncertainty dissipated.

Perhaps one of the most important conclusions that may be drawn from this latest report is that the gap between unmet needs and available funds has been narrowed to a point where, if the National Fund for Medical Education and the American Medical Education Foundation could provide an annual fund of 5 to 10 million dollars, the gap that remains for many schools would be all but eliminated. It would be a serious mistake to conclude that the battle for adequate financial support for medical education has been won, but it would be equally mistaken not to interpret the gain that has been made as a good omen for the future if the efforts of recent years are maintained.

QUOTA PLAN FOR THE APPOINTMENT OF INTERNS DEFERRED

A large majority of the hospitals approved for intern training have accepted the recently announced program (THE JOURNAL, June 30, page 865) of the Council on Medical Education and Hospitals establishing a quota basis for the appointment of interns. Some hospitals, however, have requested an increase in the number of internships for which they have been approved. A few have protested the setting of any quota.

The Council wishes to give every consideration to these requests and protests and is at present investigating and appraising them. Therefore, since it will take time to do this, and in fairness to those hospitals that have accepted the quotas as established, the Council believes that the effective date of this program should be deferred until all hospitals have had an equal opportunity to have their requests reviewed. When the quota program is

fully established, it is planned that individual hospital quotas will be reviewed annually.

In the meantime, however, the Council strongly urges, in the interest of stabilizing and improving the training of interns throughout the country, that all hospitals voluntarily cooperate in accepting the quota basis proposed by the Council for the appointment of interns for the year beginning July 1, 1952.

NEED FOR BLOOD

The American National Red Cross has been responsible for the national blood program for the armed forces and has been active in the procurement of blood for civil defense. The Department of Defense has been dependent on the Red Cross to supply the requirements of the Department throughout this period of national emergency incident to the Korean campaign. As a result of the seriousness of the current situation and the need of the Department of Defense for blood plasma within the military departments, a directive has been issued by the Department to the three military services relative to the establishment of a Department of Defense blood collection program. The directive reads:

1. Department of Defense supplies of dried human blood plasma have been gravely depleted by the demands of the Korean campaign. Its continued availability for military purposes is vital. It is imperative that action be taken to insure that an adequate supply is at all times ready for use. This means that every possible effort must be made to secure whole blood in quantity from all available sources.

2. While the processing capacity for converting whole blood to plasma has been gradually increased, the quantities of blood received from civilian sources is today woefully inadequate, and well below processing capacity. The essential reserve is not being created.

3. Accordingly, the Department of Defense will begin immediately:

(*a*) A continuous and vigorous campaign, in conjunction with the Red Cross, to persuade the civilian and military population to contribute whole blood to the Armed Forces.

(*b*) To establish an Armed Forces blood donor program within the framework of the over-all campaign, the primary purpose of which shall be to obtain blood from the service personnel on military bases within the continental United States. Civilian employees will be invited to participate.

The American Medical Association has been asked for its cooperation in this serious and urgent defense program. The help of individual physicians is needed, and they are asked to encourage others to participate. It is only through active support of the defense program and discussion, at every opportunity, of the need for blood that sufficient amounts will become available.

KEEPING THE FAMILY TOGETHER

Medical progress has cut the orphan problem in half since 1900. Although 371,000 children under 18 became orphaned by the death of a parent in 1948, the toll would have been twice that with the death rates of 1900. Likewise the number of marriages broken by the death of husband or wife would have been close to one million,[1] 50% greater than the number reported, 667,000. Chronologically, the process starts at birth with keeping both mother and newborn baby alive. The probability of a child being left motherless at birth today is only one-eighth to one-seventh the probability that its mother would have been left motherless at birth; i. e., maternal mortality has been sharply reduced in one generation. Thus medical progress and longer life are increasing family stability in a period when many families are being broken for reasons other than the death of a parent.

The age at death of a father has particular significance from the economic standpoint. When the breadwinner of the family is gone, the heavy burden of providing for the home, in addition to rearing the children, is thrust upon the mother. The younger the father at death, the heavier the mother's burden, for the greater is the number of years that must elapse before the children are self-supporting.

In 1948, there were 91,000 minor children orphaned by the death of fathers under age 45. The 82,000 orphans who survived fathers dying at ages 45 to 54 constituted the greatest number for any age group. Fathers who were 55 or over at the time of death left 67,000 children. These figures clearly indicate that the majority of orphans are created by the death of middle-aged fathers; the child dependency problem is not as acute for the widow, since many of these children are not far from the age when they may become gainfully employed.

The number of minor children becoming orphaned by the death of their mothers was about 132,000, a little more than half the number losing their fathers. The widower, spending most of the day at his place of employment, is faced with the problem of providing care for the children while he is away. This sort of situation frequently obliges the father to remarry.

Thus, in an era when nonhealth factors are breaking up many homes, the sharp declines in mortality have allowed more families to remain intact, particularly until the children have reached their majority. The community, too, has benefited by being relieved from the burden of supporting thousands of indigent widows and orphans. Medicine has a social mission, and the best way the physician can contribute toward the accomplishment of that mission is to steadily improve the science and art of medicine.

1. Lower Mortality Promotes Family Stability, Statistical Bulletin, Metropolitan Life Insurance Company 32: 1 (May) 1951.

ORGANIZATION SECTION

PUBLIC RELATIONS LITERATURE

Four pieces of complimentary literature for distribution to physicians, health groups, and the general public are currently being produced by the American Medical Association's Department of Public Relations. Two brochures, one of them now available, are designed for use in doctors' offices. The third publication will go to American Medical Association members; the fourth, a revision of the A. M. A. Handbook, will be available to state and county society officers.

An attractive, eight-page brochure, called "A Doctor for You —What's Being Done to Give You the Best," is the first of the series to be completed. In a brief, easy-to-read style it tells the nation that America's doctors "want enough doctors in the United States to meet the medical demands of every man, woman and child. Physicians may get copies of "A Doctor for You" through their county and state medical societies. The second popular piece, tentatively titled "What *Is* the A. M. A?," will be available for similar distribution to the general public by December, 1951.

Early this fall, all American Medical Association members will receive an information booklet on their national organization, briefly outlining its history, makeup, functions, and activities. The comprehensive Handbook, scheduled for fall distribution to state and county society officers, is designed as a ready reference to American Medical Association councils, committees, bureaus and departments. In addition to material contained in the current Handbook, the new publication will list executive personnel, outline recommended procedure to speed service from the Association, and provide a key to existing policy on membership and fellowship.

BOOKLET ON GROUP PRACTICE

During the three years since the Bureau of Medical Economic Research published Bulletin 63, "An Annotated Bibliography of Group Practice, 1927-1947," a considerable number of books and articles on the subject of group practice have appeared. A new publication, Bulletin 85, has recently been published by the Bureau. Items published in 1948 to 1950 have been added, and an author index has been provided for the 317 items. The brief annotations are designed to enable the reader to determine whether he should examine the published item. As noted in the introduction, all published items relating to group practice have been included, even those which may involve the corporate practice of medicine; there are many items that deal with combinations of group practice and prepaid insurance. Thus, the bibliography is not limited to group practice per se. The annotations neither approve nor disapprove the ideas of the authors. The sole purpose of this new bibliography is to serve as a reference work for those interested in group practice, broadly defined. A copy of Bulletin 85 ("An Annotated Bibliography of Group Practice, 1927-1950," 72 pages) may be obtained without charge from the Bureau of Medical Economic Research, American Medical Association, 535 North Dearborn St., Chicago 10.

CATALOG OF MOTION PICTURES

The catalog of motion pictures available through the Committee on Medical Motion Pictures has been revised. Copies will be sent to the secretary of each county and state medical society. This catalog lists sixty-two 16 mm. films, most of which are at the professional level. Fourteen of these films are suitable for showing to lay groups. Eight new films have been added. Copies are available on request from the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn St., Chicago 10.

FEDERAL MEDICAL LEGISLATION

Public Assistance

Representative Reed of New York introduced H. R. 5076, pertaining to federal grants-in-aid to states under the Social Security Act. This bill would prohibit the withholding of federal funds due a state for use in certain public assistance programs if the only reason for withholding is the enactment or enforcement of legislation by a state providing for public access to records of the disbursement of funds under such program. Another bill, H. R. 5083, by Representative Mason of Illinois, would accomplish the same objectives by repealing provisions of the Social Security Act which require state plans for old-age assistance, aid to dependent children, aid to the blind, and aid to the permanently and totally disabled, to restrict the use or disclosure of information concerning applicants or recipients to purposes directly connected with the administration of such plans. These two bills are similar in purpose to S. 1099 (previously reported).

Increased Social Security Benefits

Senator Humphrey of Minnesota introduced S. 1983, for himself and Senators Lehman, Kerr, Murray, and Langer. This bill would amend the Social Security Act by increasing insurance payments to retired workers by $5 per month. It would also increase the wife's benefit by $2.50 and a widow's benefit by $3.75. The maximum family benefit under this bill would be raised from $150 per month to $160, and the amount below which the total monthly family benefit would not be reduced by the maximum provisions is increased from $40 to $50. The bill does not call for higher rates of contribution than those already authorized by law.

Investigation of Cancer Cures

Senator Langer of North Dakota introduced S. Res. 186, which would authorize an investigation of the efficacy of methods used in the treatment of cancer by institutions. This resolution is similar to S. Res. 142, by the same author, to investigate only the Hoxsey Cancer Clinic. The new resolution would authorize the Senate Committee on Labor and Public Welfare to make a full and complete study and investigation of the efficacy of methods used in the treatment of cancer by any hospital or clinic which has been in operation for at least 10 years and which presents pathological proof of cures of internal cancer in at least five cases. One other new provision authorizes the committee personally to inspect such clinics or hospitals and to seek information from the representatives of the Food and Drug Administration, the National Cancer Institute, the American Cancer Society, and other persons or agencies having pertinent information.

Social Security—Dentists

Representative Herter of Massachusetts introduced H. R. 4943, which proposes to extend the federal old-age and survivors insurance system to persons engaged in the practice of dentistry. It will be recalled that, when the social security laws were amended in the last Congress, physicians, dentists, and certain other persons were exempt from coverage.

Veterans Presumption of Service-Connected Poliomyelitis

Two bills have been introduced which would establish a presumption of service connection for poliomyelitis contracted within five years after separation from active service by World War II veterans who were prisoners of war. These bills are H. R. 5197, introduced by Representative Corbett of Pennsylvania, and H. R. 5200, by Representative Fulton of Pennsylvania.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association.

MEDICAL NEWS

ARKANSAS

Faculty Appointments.—Dr. James H. Growdon, associate professor of surgery since 1949, has been appointed professor and head of the department of surgery at the University of Arkansas School of Medicine, Little Rock. He replaces Dr. Gilbert O. Dean, who has resigned to enter private practice. Dr. William K. Jordan, formerly head of the division of neurology at the University of Washington School of Medicine, Seattle, has been appointed professor of neurology and head of the division of neurology in the department of psychiatry and neurology, effective Sept. 1. J. Walker Beck, Ph.D., has been named assistant professor of bacteriology and parasitology.

CALIFORNIA

Dr. Wood Heads University Cancer Institute.—Dr. David A. Wood, Stanford University pathologist, has been appointed director of the Cancer Research Institute of the University of California School of Medicine, San Francisco, effective Sept. 1. He succeeds Dr. Robert S. Stone, professor of radiology, who has been acting director since the establishment of the Institute in 1948. Dr. Wood became a member of the Stanford faculty in 1930 and has been affiliated with that institution since then. His active service during World War II included directorship of the Oak Knoll Laboratories, Oakland, for two years and the organization of blood banks at Treasure Island and Oak Knoll. Dr. Wood has been secretary of the Cancer Commission of the California Medical Association since 1945. He was secretary of the California division of the American Cancer Society from 1945 to 1949 and is now professional director for Region VI of the national organization.

DELAWARE

State Medical Meeting.—The Medical Society of Delaware will hold its annual meeting at the Hotel DuPont in Wilmington Oct. 8-10. Scientific sessions beginning Oct. 9 will be addressed by the following out-of-state speakers:

Douglas T. Davidson Jr., Boston, Diagnosis and Treatment of Epilepsy.
Richard G. Coblentz, Baltimore, Craniocerebral Injuries.
C. Everett Koop, Philadelphia, Certain Aspects of Surgery of the Newborn.
Lee E. Farr, Upton, Long Island, N. Y., Treatment of Nephrosis.
Hugh Montgomery, Philadelphia, Treatment of Peripheral Arterial Disease.
R. Ralph Bresler, Philadelphia, Industry's Challenge to Medicine.
Franklin L. Payne, Philadelphia, Care of the Woman in the Postmenopausal Era.
O. Spurgeon English, Philadelphia, Role of the General Practitioner in Counselling Before and After Marriage.
J. Robert Willson, Philadelphia, Potential Dangers from the Incomplete Examination of the Pregnant Woman.
P. Robb McDonald, Philadelphia, Retrolental Fibroplasia.
H. Clinton Davis, Philadelphia, Management of Intractable Achalasia.

At the reception and dinner Tuesday evening Dr. John W. Cline, San Francisco, President of the American Medical Association, will give the address. The Woman's Auxiliary to the association will meet Oct. 9-10 at the Delaware Academy of Medicine.

IDAHO

State Medical Election.—At the annual meeting of the Idaho State Medical Association in Sun Valley June 15-18, Dr. Alfred M. Popma, Boise, was installed as president. Officers elected include Dr. Wallace Bond, Twin Falls, vice president, and Dr. Robert S. McKean, Boise, secretary-treasurer. Dr. Hoyt B. Woolley, Idaho Falls, was named delegate to the American Medical Association, with Dr. Raymond L. White, Boise, as alternate.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

ILLINOIS

Society News.—Newly elected officers of the Illinois Society for Medical Research are Drs. Anton J. Carlson, professor emeritus of physiology at the University of Chicago, president; Dr. Andrew C. Ivy, vice president and head of the professional colleges, University of Illinois, vice president; N. R. Brewer, superintendent of animal quarters, University of Chicago, secretary, and Dr. Carl C. Pfeiffer, head of the department of pharmacology of the University of Illinois, treasurer. The society, an affiliate of the National Society for Medical Research, is planning to expand its membership and activities.

Requirements for Municipal Fluoridation of Water.—Requirements to be met by cities prior to receiving Illinois State Department of Public Health approval for addition of tooth decay preventing sodium fluoride to public water supplies have been revised and simplified by the department. The new requirements are as follows:

1. The municipality must pass an ordinance or resolution indicating the public's decision to fluoridate the public water supply, submitting a copy to the Illinois Department of Public Health.
2. Evidence of acceptance and approval of fluoridation by local medical and dental groups must be submitted by a resolution or other document.
3. In accordance with the Illinois Department of Public Health's statutory jurisdiction over public water supplies, engineering plans and specification for the installation of the fluoridation process must be prepared and submitted for review and approval prior to installation.

The health department is encouraging addition of fluorides to public water supplies in concentrations not to exceed one to one and one-half parts of fluoride to a million parts of water.

Chicago

Blatt Memorial Lecture.—The third Maurice Lamm Blatt Memorial Fund Lecture will be given by Dr. Irvine McQuarrie, professor and head of the department of pediatrics, University of Minnesota, Minneapolis, who will speak on "Clinical and Experimental Studies on Hypoglycemia." This lecture, sponsored by the pediatric staff, will be given at 8:30 p. m. Oct. 2, in the Medical Amphitheatre of Cook County Hospital. All interested physicians are invited to attend.

Tuberculosis Deaths Reduced Twenty Per Cent.—According to Dr. Herman N. Bundeson, president of the board of health, tuberculosis deaths in Chicago declined 20.1% in the first six months of 1951 compared with a similar period last year. Through June, 1950, there were 603 tuberculosis deaths, and in the same period in 1951, 482 deaths. Dr. Bundeson credited the decrease to greater public health knowledge. Between 1945 and 1950, he said, the city's tuberculosis death rate was cut 41%, reaching a figure of 29.3 per 100,000 persons. Chicago plans to step up its campaign against tuberculosis in keeping with the plans of Dr. Ernest E. Irons, president of the Chicago Municipal Tuberculosis Sanitarium. For the year ending March 31, the Tuberculosis Institute and the sanitarium jointly conducted a mass x-ray survey of 459,220 persons in Cook County; 9,586 suspected cases of tuberculosis were found.

MARYLAND

General Practice Assembly.—The third assembly of the Maryland Academy of General Practice will be held Oct. 4 in the Lord Baltimore Hotel, Baltimore. Papers will be read by the following:

William G. Lennox, Boston, Convulsive Disorders.
Wallace M. Yater, Washington, D. C., Cardiac Emergencies.
Sidney A. Portis, Chicago, Treatment of Liver Diseases.
Lloyd F. Craver, New York, The Leukemias and Hodgkins Disease.
Robert B. Greenblatt, Augusta, Ga., Endocrinology in Gynecology.
John C. Krantz Jr., Ph.D., Baltimore, Use and Abuse of Some of the Newer Drugs.
Lewis K. Ferguson, Philadelphia, Ambulatory Surgery.
Irvine McQuarrie, Minneapolis, Causes and Therapeutic Management of Spontaneous Hypoglycemia.

MICHIGAN

Hospital News.—St. Joseph Hospital and Medical Center, Hancock, was dedicated July 29. The new seven-story 170-bed hospital was erected and equipped at a cost of $2,500,000. It will be operated by the Sisters of St. Joseph of Carondelet.

State Medical Meeting.—The Michigan State Medical Society will hold its annual meeting at the Pantlind Hotel and Civic Auditorium in Grand Rapids, Sept. 26-28. Out-of-state speakers include the following:

Reginald H. Smithwick, Boston, Surgical Measures in the Management of Hypertensive Cardiovascular Disease.
Sara M. Jordan, Boston, Peptic Ulcer, Complications and Treatment.
Ralph A. Reis, Chicago, Prolonged Labor.
Stephen Rothman, Chicago, Neurodermatitis (Atopic Eczema).
Willis J. Potts, Chicago, Intestinal Obstruction in Infants and Children Due to Congenital Anomalies.
Austin I. Dodson, Richmond, Va., Indication for Surgery in the Treatment of Nephroptosis.
Albert H. Aldridge, New York, Complete Abdominal Hysterectomy.
Charles R. Doyle, St. Louis, Acute Conditions of the Abdomen.
Richard V. Ebert, Minneapolis, Differentiation of Dyspnea Caused by Cardiac Disease from Dyspnea Associated with Pulmonary Emphysema.
Henry L. Williams, Rochester, Minn., Physiologic Phenomena Misinterpreted as Rhinologic Disease.
S. William Becker, Chicago, The New Versus the Old in the Treatment of Syphilis.
Elmer L. Sevringhaus, Nutley, N. J., Vitamin Therapy in Clinical Practice.
John Martin, Chicago, Neurosurgical Methods for the Relief of Pain.
Walter P. Blount, Milwaukee, Treatment of the Painful Hip.
Waldo E. Nelson, Philadelphia, Errors in the Therapy of Infectious Diseases in Infants and Children.
James W. Kernohan, Rochester, Minn., Peripheral Neuritis.
Oscar T. Clagett, Rochester, Minn., Mediastinal Lesions.
Raymond D. Pruitt, Rochester, Minn., Recent Advances in Diagnosis of Heart Disease.

At the general public meeting Wednesday evening, Clarence Manion, dean of the College of Law, University of Notre Dame, South Bend, Ind., will deliver the Biddle Lecture on "The Key to Peace." Twenty-two quiz periods will be held in the late afternoon of each day, when questions may be directed to various visiting speakers. The Woman's Auxiliary will meet Sept. 25-27. On Thursday evening at 10:30 there will be a State Society Night of entertainment with dancing and a floor show at the hotel.

NEW JERSEY

Medical Practice Act Violations.—The Board of Medical Examiners of the department of law and public safety, Trenton, has reported the following violations of medical practice during July and August. On July 6 Alfred W. Steever of Riverside, an unlicensed chiropractor, was tried in the Burlington County District Court on a charge of practicing medicine without a license, and was found guilty. He took x-rays, used a neuromicrometer machine for diagnostic purposes, and gave adjustments to various parts of the body. On July 9 William H. Richmond of Red Bank, a registered pharmacist, paid a penalty for practicing medicine without a license. On July 9 Joseph Tuliglowicz of Newark, a naturopath, paid a penalty for practicing medicine without a license. He gave adjustments and electric treatments and ordered various remedies. This was a sixth offense. On July 9 Henry G. Garruto of Red Bank, an unlicensed chiropractor, paid a penalty for practicing medicine without a license. He took x-rays, blood pressure and adjusted various parts of the body. On July 23 George Lezenby Sr., Camden, paid a penalty for practicing medicine without a license. He gave electric and manipulative treatments. This was a seventh offense. On Aug. 4 the following persons paid penalties for practicing medicine without a license: George B. Van Dyke of Trenton, a naturopath, who gave manipulative and electric treatments, a third violation; Sara Sussman of Passaic, a physiotherapist, who gave colonic irrigations, sinusoidal wave treatments, and diets for reducing, a second offense; James A. Mackey of Trenton, an unlicensed chiropractor who adjusted various parts of the body, a fourth violation; and Norman O. Carver of Neptune City, a naturopath and unlicensed chiropractor, who gave short wave treatments, massage, manipulative treatments, and medicine.

NEW YORK

Biggs Award.—The Hermann M. Biggs Memorial Award has been established by the state public health association. It will be given annually for "outstanding service in the cause of better health for the people of New York State." The plaque and a certificate may be presented to a public health worker or to any outstanding citizen in the health field. The award was established in memory of Dr. Biggs, who served as the state's first health commissioner from 1913 to 1923.

New York City

Personal.—Dr. Leonard J. Goldwater, professor of industrial hygiene at the Columbia University School of Public Health, New York, has been recently appointed a member of the World Health Organization expert advisory panel on social and occupational health.

Hospital Record Year.—The Hospital Council of Greater New York has reported that hospitals in the city during 1950 provided the largest number of days of general care in the past 15 years: 9,669,987 days. This represents an increase of more than 1,200,000 days of care since 1944. The figure indicates a trend toward more efficient utilization of available facilities since there has been no major increase in the number of hospital beds.

Dr. Nelson Heads Department.—Dr. Carl T. Nelson, assistant clinical professor of dermatology at Columbia University College of Physicians and Surgeons, has been named executive of his department succeeding the late Dr. A. Benson Cannon. Dr. Nelson, who joined the university staff and the clinical staff of Vanderbilt Clinic in 1946, had been a member of the bacteriology department of Harvard Medical School, Boston, until he entered the Army medical service during World War II. During that time he served as chief of the department of epidemiology and bacteriology for the Fourth Service Command at Fort McPherson, Ga.

PENNSYLVANIA

State Heart Association Grants.—The Heart Association of Southeastern Pennsylvania has made three grants-in-aid. A grant of $4,000 was made to St. Christopher's Hospital for a study of rheumatic fever among the pupils of the public and parochial schools of Philadelphia, and a similar grant was made to the Children's Hospital of Philadelphia. The work at St. Christopher's Hospital will be supervised by Dr. Waldo Nelson and Dr. Robert Wells, and that at Children's Hospital by Dr. Rachel Ash. The third grant-in-aid was made to Dr. Thomas M. McMillan and Dr. Samuel Bellet at the Philadelphia General Hospital for studies in the recent advances in arteriosclerosis, with particular reference to coronary arteriosclerosis.

Philadelphia

Course in Clinical Endocrinology.—This course will be given at Philadelphia General Hospital on Wednesday afternoons 4:30 to 6 p. m. beginning Sept. 26. There will be 30 sessions under the direction of Dr. William H. Perloff. A discussion period will be an integral part of each session. Participating lecturers, all from the hospital staff, include Dr. Perloff and Drs. Thomas M. Durant, William E. Ehrich, Herman W. Ostrum, Norman G. Schneeberg, and Sholom O. Waife, and Harry Hadd, M.S.

WASHINGTON

Meeting on Obstetrics.—The Washington State Obstetrical Association will hold its fall meeting Sept. 8 at the Washington Athletic Club in Seattle. Dr. Eakle W. Cartwright, associate clinical professor of obstetrics and gynecology at the University of Southern California School of Medicine, Los Angeles, will speak on "Bleeding in the Third Trimester of Pregnancy," and Dr. Gilbert J. Vosburgh, professor of obstetrics and gynecology at the Western Reserve School of Medicine, Cleveland, will speak on "Recent Advances in Obstetrics." Dr. Albert W. Holman, former associate in obstetrics and gynecology at the University of Oregon Medical School, Portland, will serve as moderator at the symposiums following the luncheon and the banquet.

State Medical Meeting.—The annual convention of the Washington State Medical Association will be held at the Olympic Hotel, Seattle, Sept. 9-12 under the presidency of Dr. Kenneth L. Partlow, Olympia. The program of sports, entertainment, and business sessions will begin Sept. 8 and will be followed by the general scientific sessions. Visiting speakers include Dr. Edward D. Allen, Chicago, whose subject will be "Diagnosis, Treatment and Etiological Factors in Endometriosis," and Dr. Stewart G. Wolff, New York, who will speak on "Practical Aspects of Treatment of Headache." On Tuesday afternoon there will be a symposium on alcoholism with Drs. Ted A. Loomis, Walter L. Voegtlin, and Stephen Fleck, all of Seattle, as participants. A forum on Fundamental Problems, over which Dr. James W. Haviland, Seattle, will preside, is to be held Wednesday afternoon. The buffet luncheon will take place Wednesday noon with Clem Whitaker and Leone Baxter, public relations consultants of the American Medical Association, as speakers. The guest speaker at the Tuesday luncheon will be John M. McClelland Jr., editor of the Longview Daily News, who will speak on "Better Working Relationship Between the Journalism and Medical Professions," in connection with the efforts of the Washington State Medical Association and the Allied Daily Newspapers to develop a code of cooperation.

WISCONSIN

State Medical Meeting.—The annual meeting of the State Medical Society of Wisconsin will be held at the Hotel Schroeder and Milwaukee Auditorium Oct. 1-3 under the presidency of Dr. Henry H. Christofferson, Colby. The preliminary program lists the following visiting speakers at the general sessions:

Franklin D. Johnston, Ann Arbor, Mich., Accurate Cardiac Diagnosis.
O. Spurgeon English, Philadelphia, A Treatment Plan for Psychosomatic Illness.
George M. Lyon, Washington, D. C., Medical Aspects of Atomic Exposure.
Frank H. Bethell, Ann Arbor, Mich., Treatment of Anemia.
Edward M. Dorr, Chicago, Obstetrical Anesthesia and Analgesia.
George M. Guest, Cincinnati, Salicylate Poisoning.
John P. Caffey, New York, Some Recently Recognized Bone Lesions in Children.
Carl A. Moyer, Dallas, Texas, The Changing Aspect of Gastric Cancer.
Everett I. Evans, Richmond, Va., Dangers of Delayed Operation in Intestinal Obstruction.

On Monday afternoon there will be a symposium on Coronary Heart Disease, the participants being Drs. John B. Miale, Marshfield, Wis.; Franklin D. Johnson, Ann Arbor, Mich.; Francis F. Rosenbaum, Milwaukee, and Joseph W. Gale, Madison, Wis. On Tuesday morning there will be a symposium on Carcinoma of the Lung, the participants being Drs. William A. D. Anderson, Milwaukee; Lester W. Paul, Madison, Wis., and Oscar T. Clagett, Rochester, Minn. The dinner speaker on Oct. 2 will be Donald J. Cowling, Ph.D., president emeritus of Carleton College, Northfield, Minn., whose subject will be "Our American Heritage." There will be daily special teaching programs from 9 to 10:15 a. m. on fractures, obstetric problems, anesthesia, hearing, and x-ray interpretations. Round table luncheons will be held daily and section programs will be given from 2:30 to 4:30 p. m. Oct. 3.

GENERAL

Neurosurgical Society Meeting.—The Neurosurgical Society of America will hold its fourth annual meeting in Sun Valley, Idaho, Sept. 12-14. Panel discussions make up the program for the first two days and individual papers will be presented Friday morning. Discussions and moderators are as follows:

Clinical Pathologic Conference, Alfred Uihlein, Mayo Clinic, Rochester, Minn.
Hypertension, Charles E. Troland, Medical College of Virginia, Richmond, Va.
The Therapy of Gliomas, Francis J. Otenasek, Baltimore.

Dr. Antunes Appointed Assistant Director.—Dr. Paulo C. A. Antunes has been appointed assistant director of the Pan American Sanitary Bureau, Regional Office of the World Health Organization, replacing Dr. John R. Murdock, who resigned to return to the U. S. Public Health Service. Dr. Antunes has been in charge of the bureau's public health programs for the past three years. On May 30, while in São Paulo, Brazil, he was appointed dean of the School of Hygiene and Public Health of the University of São Paulo, Dr. Antunes was released by the university, and the assistant dean of the school will carry on during his absence. From 1945 to 1947 he was professor of rural health practice and parasitology at the School of Hygiene and Public Health in São Paulo, and he was made director of the São Paulo State department of health in 1947. In 1949 he was released from this position by the Brazilian government in order to accept his post as chief of the Division of Public Health in the Pan American Sanitary Bureau in Washington.

Transcriptions of Community Action Series Available.—Transcriptions of "All Their Powers," five half-hour radio documentaries on community action for better health, are being made available to community groups for rebroadcast. The programs were originally broadcast as a public service May 12 to June 9, by the Health Information Foundation and the National Broadcasting Company, coproducers. The foundation, 420 Lexington Ave., New York 17, makes no charge for use of the recordings but asks that they be returned promptly. Community groups wishing to promote use of the programs should first approach the program manager of the local NBC station. If he is not interested, or no NBC station exists in the town, the Health Information Foundation will provide information about what local station may be able to use the programs.

Association Meeting.—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons held its annual meeting at The Homestead, Hot Springs, Va., Sept. 6-8 under the presidency of Dr. James K. Quigley, Rochester, N. Y. Those speaking by invitation included the following:

Robert J. Kellar, Edinburgh, Scotland, The Joseph Price Oration, Circulation in Pregnancy.
Andrew A. Marchetti, Washington, D. C., Homologous Ovarian and Testicular Tumors.
Joseph A. Hardy Jr., St. Louis, Mesodermal Mixed Tumors of the Uterus.
Allan C. Barnes, Columbus, Ohio, Studies in the Cholinesterase-Hormone Relationship.
Silas H. Starr, Louisville, Prolonged Labor.

The speaker at the banquet at 7:30 p. m. Friday was Dr. Alvah S. Miller, Wuchang, Hupeh, China.

Vermont-New Hampshire Joint Annual Meeting.—The joint annual meeting of the New Hampshire and Vermont state medical societies will be held at the Equinox Hotel, Manchester, Vt., Sept. 30 through Oct. 2. Visiting speakers at the general sessions include the following:

John S. L. Browne, Montreal, Canada, Basic Considerations in the Use of ACTH and Cortisone.
Chester S. Keefer, Boston, Present Day Evaluation of Antibiotics.
John F. Merrill, Boston, Hypertension.
John Rock, Boston, Physiology of Conception, Its Disorders and Treatment.
Ebbe Curtis Hoff, Richmond, Va., The Virginia Program for the Rehabilitation of Addictive Drinkers.

There will be section meetings Monday afternoon and a series of special meetings beginning at 4 p. m. At the banquet at 7 p. m. Monday the speaker will be Ralph E. Flander, Springfield, senator from Vermont. The woman's auxiliaries will meet in conjunction with the associations.

Grants and Fellowships in Cancer Research.—The Committee on Growth of the National Research Council, acting for the American Cancer Society, is accepting applications for grants and fellowships. Applications for new grants will be received until Oct. 1. Investigators will be notified individually regarding application for extension of present grants. Final decision on applications will be made early in 1952. Grants approved at this time ordinarily will become effective July 1, 1952. Applications for American Cancer Society Fellowships in Cancer Research received prior to Nov. 1 will be acted upon by the Committee on Growth in December. Those received between Nov. 1 and March 1 will be acted upon in April. Fellowships ordinarily will begin July 1, though this date may be varied at the request of the applicant. Details regarding availability of Damon Runyon Fellowships will be announced later. During the past year the American Cancer Society, Inc., on recommendation of the Committee on Growth, has awarded grants and fellowships approxi-

mating 2 million dollars. A program of similar magnitude is contemplated for the coming year. Application blanks and additional information may be obtained from the Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated:

Area	Weeks Ended Aug. 25, 1951	Aug. 18, 1951	Aug. 26, 1950
New England States			
Maine	4	6	1
New Hampshire	3	1	2
Vermont	5	6	3
Massachusetts	21	29	19
Rhode Island	3	1	1
Connecticut	20	16	33
Middle Atlantic States			
New York	109	103	184
New Jersey	32	22	53
Pennsylvania	46	49	77
East North Central States			
Ohio	83	95	86
Indiana	27	29	23
Illinois	90	151	113
Michigan	85	117	95
Wisconsin	107	84	63
West North Central States			
Minnesota	43	39	27
Iowa	38	57	54
Missouri	55	50	7
North Dakota	7	6	5
South Dakota	4	7	7
Nebraska	32	21	22
Kansas	63	62	33
South Atlantic States			
Delaware	..	..	2
Maryland	5	4	33
District of Columbia	14	1	10
Virginia	10	14	67
West Virginia	12	8	35
North Carolina	15	23	65
South Carolina	11	17	27
Georgia	47	42	23
Florida	13	15	9
East South Central States			
Kentucky	31	22	36
Tennessee	36	43	35
Alabama	54	54	15
Mississippi	56	40	23
West South Central States			
Arkansas	36	34	14
Louisiana	39	51	17
Oklahoma	34	48	22
Texas	84	95	113
Mountain States			
Montana	6	6	6
Idaho	7	5	2
Wyoming	15	4	2
Colorado	114	82	9
New Mexico	14	4	4
Arizona	25	19	6
Utah	53	50	3
Nevada	1	3	2
Pacific States			
Washington	17	16	34
Oregon	11	6	15
California	133	108	80
Territories and Possessions			
Alaska	1	..	1
Hawaii	..	..	..
United States	1,771	1,765	1,618

FOREIGN

Symposium on the Adrenal Cortex.—A symposium on the "Influence of Hypophysis and the Adrenal Cortex on Biological Reactions," organized by the Swiss Academy of Medical Sciences, will take place in Zurich, Sept. 30-Oct. 3, immediately after the International Congress of Allergists. The speakers will be the following:

Robert S. Levine, Chicago, The Adrenal Cortex as a Regulator in Tissue Reactions.

Burton L. Baker, Ph.D., Ann Arbor, Mich., Influence of the Adrenal Cortex on Tissue-Reactions to Simple Injuries with Regard to Different Tissue Elements.

Thomas F. Dougherty, Ph.D., Salt Lake City, Influence of the Adrenal Cortex on Allergic Reactions: (a) Anaphylaxis, (b) Eczematous Allergy.

D. A. Long, London, Influence of the Adrenal Cortex on the Allergic Reactions: (c) Infectious Allergy.

Gregory Shwartzman, New York, Influence of the Adrenal Cortex on the Allergic Reactions: (d) Hemorrhagic Reactions.

Matthew Taubenhaus, Chicago, Synergism and Antagonism of Hormones in the Mechanism of Tissue Reactions.

The president of the Swiss Academy of Medical Sciences is Prof. Dr. G. Miescher, Zürichbergstrasse 43, Zürich 44.

European Congress of Hematology.—This congress of the European Society of Hematology will take place in Rome Oct. 3-6 under the patronage of the Hematology Society of Italy. Those interested in participating are requested to report to Dr. M. Torrioli, Via Genova 24, Rome, from whom congress cards are available at a fee of 15 Swiss francs for members, 20 for nonmembers. The provisional program lists the following topics and speakers:

Isotopes in Hematological Research and Therapy, John H. Lawrence, Berkeley, Calif., and J. Waldenström, Malmo, Sweden.

New Histochemical and Physical Methods of Examination, W. Laves, Munich, Germany; E. Storti, Pavia, Italy; H. Luding, Basel, Switzerland; B. Thorell, Stockholm, Sweden, and N. Bessis, Paris, France.

Reticulosis, Reticuloendotheliosis, and Reticulosarcomatosis, Ahlström, Lund, Sweden; Van der Meer and Zeldendrust, Leiden, Holland; K. Rohr, Zurich, Switzerland, and Cazal, Montpellier, France.

ACTH and Cortisone in Hematology, Joseph H. Burchenal, New York.

CORRECTIONS

Author's Address.—In THE JOURNAL of Aug. 4, 1951 (page 1315), the address of Dr. Reginald Everett, author of the clinical note "Anaphylactic Reactions from Local Use of Penicillin," was omitted. Dr. Everett's address is 11 Wall St., New York City.

Meeting on Gastroenterology.—Dr. Cornelius P. Rhoads, New York, is one of the speakers at the annual meeting of the National Gastroenterological Association being held in Chicago Sept. 17-19, not Dr. Charles P. Rhoads as was stated in THE JOURNAL, Sept. 1, p. 69.

MEETINGS

AMBULATORY FRACTURE ASSOCIATION, Arrowhead Springs Hotel, San Bernardino, Calif., Oct. 8-11. Dr H. W. Wellmerling, 626 Griesheim Bldg., Bloomington, Ill., Secretary.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Chicago, Oct. 14-18. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Toronto, Canada, Oct. 20-25. Dr. E. H. Christopherson, 636 Church St., Evanston, Ill., Executive Secretary.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, The Seigniory, Montebello, Quebec, Canada, Oct. 23-25. Dr. Charles G. Johnston, 1512 St. Antoine St., Detroit 26, Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, Hotel Nicollet, Minneapolis, Oct. 22-24. Miss Marjorie Saunders, 3301 Junius St., Dallas 1, Texas, Secretary.

AMERICAN CANCER SOCIETY, New York, Oct. 25. Dr. Charles S. Cameron, 47 Beaver St., New York, Medical Director.

AMERICAN HOSPITAL ASSOCIATION, St. Louis, Sept. 17-20. Mr. George Bugbee, 18 E. Division St., Chicago 10, Executive Director.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Pere Marquette Hotel, Peoria, Ill., Sept. 19. Dr. Harold Swanberg, 209 W.C.U. Bldg., Quincy, Ill., Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION, Civic Auditorium, San Francisco, Oct. 29-Nov. 2. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Washington, D. C., Sept. 25-28. Dr. Barton R. Young, Germantown Hospital, Philadelphia 44, Secretary.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Chicago, Oct. 15-20. Dr. Clyde G. Culbertson, 1040 W. Michigan St., Indianapolis 7, Secretary.

AMERICAN SOCIETY OF MAXILLOFACIAL SURGEONS, Drake Hotel, Chicago, Sept. 23-26. Dr. Casper M. Epsteen, 25 E. Washington St., Chicago 2, Secretary.

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA, New York, Oct. 11-12. Dr. Henry B. Kirkland, P. O. Box 594, Newark 1, N. J., Secretary.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES, French Lick Springs Hotel, French Lick, Ind., Oct. 29-31. Dr. Dean F. Smiley, 185 N. Wabash Ave., Chicago 1, Secretary.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, Palmer House, Chicago, Oct. 8-10. Colonel James M. Phalen, Armed Forces Institute of Pathology, Washington 25, D. C., Secretary.

CENTRAL NEUROPSYCHIATRIC ASSOCIATION, Hotel Nicollet, Minneapolis, Oct. 19-20. Dr. Lee M. Eaton, 102 Second Ave. S.W., Rochester, Minn., Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel, Chicago, Nov. 2-3. Dr. Kenneth G. Kohlstaedt, 960 Locke St., Indianapolis 7, Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Chicago, Oct. 15-16. Dr. Tracy B. Mallory, Massachusetts General Hospital, Boston, Secretary.

COLORADO STATE MEDICAL SOCIETY, Denver, Sept. 18-21. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

DELAWARE, MEDICAL SOCIETY OF, Wilmington, Oct. 8-10. Dr. Andrew H. Gehret, 1007 Park Place, Wilmington, Secretary.

DISTRICT OF COLUMBIA, MEDICAL SOCIETY OF THE, Hotel Statler, Washington, Oct. 1-3. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

GULF COAST CLINICAL SOCIETY, Edgewater Gulf Hotel, Edgewater Park, Miss., Oct. 18-19. Dr. C. D. Taylor, 113 Davis Ave., Pass Christian, Miss., Secretary.

INDIANA STATE MEDICAL ASSOCIATION, Indianapolis, Oct. 29-31. Miss Lucille Kribs, 23 E. Ohio St., Indianapolis 4, Acting Secretary.

INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, St. Louis, Oct. 22-26. Dr. Tom B. Throckmorton, Equitable Bldg., Des Moines, Iowa, Secretary.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Municipal Auditorium, Kansas City, Mo., Oct. 1-4. Dr. Maxwell G. Berry, 630 Shukert Bldg., Kansas City, Mo., Director of Clinics.

KENTUCKY STATE MEDICAL ASSOCIATION, Columbian Auditorium, Louisville, Oct. 2-5. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

MICHIGAN STATE MEDICAL SOCIETY, Grand Rapids, Sept. 26-28. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Secretary.

MIDWEST REGIONAL MEETING AMERICAN COLLEGE OF PHYSICIANS, Columbus, Ohio, Oct. 13. Dr. B. K. Wiseman, Kinsman Hall, Ohio State University, Columbus 10, Ohio, Chairman.

MISSISSIPPI VALLEY MEDICAL SOCIETY, Peoria, Ill., Sept. 19-21. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

MONTANA MEDICAL ASSOCIATION, Great Falls, Sept. 13-16. Mr. L. R. Hegland, 104 N. Broadway, Billings, Executive Secretary.

NASHVILLE POSTGRADUATE MEDICAL ASSEMBLY, Maxwell House, Nashville, Tenn., Oct. 3-5. Dr. W. G. Kennon Jr., 647 Doctors Bldg., Nashville 3, Secretary.

NEUROSURGICAL SOCIETY OF AMERICA, Sun Valley, Idaho, Sept. 12-14. Dr. C. D. Hawkes, 22 N. Manassas St., Memphis 5, Tenn., Secretary.

NEVADA STATE MEDICAL ASSOCIATION, Riverside Hotel, Reno, Sept. 13-15. Dr. Wesley W. Hall, 307 W. Sixth St., Reno, Secretary.

NEW HAMPSHIRE MEDICAL SOCIETY, Equinox House, Manchester, Vermont, Sept. 30-Oct. 2. Dr. Deering G. Smith, 44 Chester St., Nashua, Secretary.

NORTHEASTERN SECTION, SOUTHEASTERN SURGICAL CONGRESS, Lord Baltimore Hotel, Baltimore, Sept 13-15. Dr. W. Raymond McKenzie, Medical Arts Bldg., Baltimore 1, Secretary.

NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE, Wichita Falls, Texas, Sept. 19. Dr. W. L. Powers, 517 Hamilton Bldg., Wichita Falls, Chairman.

OKLAHOMA CITY CLINICAL SOCIETY, Biltmore Hotel, Oklahoma City, Oct. 29-Nov. 1. Mrs. Muriel R. Waller, 612 Medical Arts Bldg., Oklahoma City, Executive Secretary.

OMAHA MID-WEST CLINICAL SOCIETY, Hotel Paxton, Omaha, Oct. 29-Nov. 2. Dr. L. E. Moon, 1031 Medical Arts Bldg., Omaha 2, Secretary.

OREGON STATE MEDICAL SOCIETY, Masonic Temple, Portland, Oct. 10-13. Dr. Robert F. Miller, 833 S.W. Eleventh Ave., Portland 5, Secretary.

PENNSYLVANIA, MEDICAL SOCIETY OF THE STATE OF, Pittsburgh, Sept. 16-20. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh 22, Secretary.

SOUTHWESTERN MEDICAL ASSOCIATION, El Paso, Texas, Oct. 18-20. Dr. W. W. Schuessler, 1415 First National Bank Bldg., El Paso, Texas, Secretary.

SOUTHWESTERN SURGICAL CONGRESS, Hotel Jefferson, St. Louis, Sept. 24-26. Dr. C. R. Rountree, 1227 Classen St., Oklahoma City 3, Secretary.

TEXAS ACADEMY OF GENERAL PRACTICE, Shamrock Hotel, Houston, Texas, Sept. 10-11. Dr. B. H. Bayer, 104 E. 20th St., Houston 8, Secretary.

U. S. CHAPTER, International College of Surgeons, Palmer House, Chicago, Sept. 10-14. Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago, Executive Secretary.

UTAH STATE MEDICAL ASSOCIATION, Salt Lake City, Sept. 13-15. Dr. T. C. Weggeland, 42 S. Fifth East St., Salt Lake City, Secretary.

VERMONT STATE MEDICAL SOCIETY. Equinox House, Manchester, Sept. 30-Oct. 2. Dr. James P. Hammond, 542 Main St., Bennington, Secretary.

VIRGINIA, MEDICAL SOCIETY OF, Virginia Beach, Oct. 7-10. Mr. Richard H. Nash, 1105 W. Franklin St., Richmond, Executive Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Olympic Hotel, Seattle, Sept. 9-12. Dr. James W. Haviland, 338 White-Henry-Stuart Bldg., Seattle, Secretary.

WISCONSIN, STATE MEDICAL SOCIETY OF, Hotel Schroeder and Milwaukee Auditorium, Milwaukee, Oct. 1-3. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison 3, Secretary.

WYOMING STATE MEDICAL SOCIETY, Rock Springs, Sept. 27-29. Dr. Glenn W. Koford, 2020 Carey Ave., Cheyenne, Secretary.

INTERNATIONAL

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

EUROPEAN CONGRESS ON RHEUMATISM, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edström, Lund, Sweden, Secretary.

GENERAL PRACTITIONERS STUDY CLUB INTERNATIONAL, Rome, Italy, Sept. 12-15. Dr. John O'Connell, 10300 Lackland Road, St. Louis 14, Mo., U. S. A., President.

INTER-AMERICAN CONGRESS OF SURGERY, Buenos Aires, Argentina, Oct. 1-6.

INTERNATIONAL ASSOCIATION OF ALLERGISTS, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

INTERNATIONAL CONGRESS OF ANESTHESIOLOGY, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept 20-22. 12 rue de Seine, Paris 6e, France, Secretariat.

INTERNATIONAL CONGRESS ON INDUSTRIAL MEDICINE, Instituto Superior Técnico, Lisbon, Portugal, Sept. 9-15. Dr. Luis Guerreiro, Instituto Nacional do Trabalho e Previdência, Praça do Comercio, Lisbon, Secretary General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19. Mrs. Grace E. O'Neill, Division of World Affairs, National Association on Mental Health, 1790 Broadway, New York 19, N. Y.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

INTERNATIONAL SOCIETY OF SURGERY, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

PAN AMERICAN CONGRESS OF PEDIATRICS, Montevideo, Uruguay, Dec. 5-8. Dr. Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio, 1246, Montevideo, Uruguay, General Secretary.

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

WORLD MEDICAL ASSOCIATION, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* Memphis, Oct. 14-17. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Chicago, March 1952. *Oral.* Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various centers, Oct. 15. Final date for filing applications was May 1. *Oral.* The schedule of oral examinations for 1951 has been arranged on a regional basis as follows: New York, Nov. 12-15, covering Maine, Massachusetts, New Hampshire, New York and Vermont. San Francisco, Oct. 22-24, covering Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. Final date for filing applications was Sept. 1.

Only candidates who have not taken an oral examination can be admitted under the schedule arranged thus far.

Oral examinations in the subspecialties will be held at the same time and place and on the same distribution.

Exec. Sec., Dr. William A. Werrell, 1 W. Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, Oct. 25-26. *Oral* Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan. 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Feb. 1, 1952. Final date for filing applications is Nov. 1. *Oral.* Chicago, June 7-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Oral.* Chicago, October 8-13. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Final date for filing applications for the 1952 Part II examinations is Nov. 30, 1951. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 8-12. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Buffalo, Oct. 26-28. Ex. Sec., Dr. John McK. Mitchell, 6 Cushman Rd., Rosemont, Pa.

AMERICAN BOARD OF PLASTIC SURGERY: Denver, Oct. 27-29. Final date for filing of case reports was Aug. 30. Sec., Dr. Bradford Cannon. Office of the Board: 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Written.* San Francisco, October 28. *Oral.* San Francisco, October 29. Sec., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: Philadelphia, Nov. 17-18. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERCIAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral* New York, Dec. 17-18. Final date for filing applications was Sept. 1. Act. Sec., Dr. David A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various centers, Oct. 1951. Final date for filing applications was July 1. *Written.* Various Centers. March 1952. Final date for filing application is Dec. 1, 1951. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

BOARD OF THORACIC SURGERY: *Oral.* St. Louis, Nov. 2. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2, Mich.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-13, 1952. Final date for filing applications is Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

DEATHS

Fallon, John Michael ✠ Worcester, Mass.; born in Worcester, Sept. 17, 1901; Harvard Medical School, Boston, 1923; formerly on the faculty of his alma mater; councilor of the Massachusetts Medical Society since 1937 and its representative to the House of Delegates of the American Medical Association in 1946, 1948, and 1950; an Associate Fellow of the American Medical Association; specialist certified by the American Board of Surgery; member of the International Society of Surgery, American Physicians' Art Association, Medical Library Association, Biological Photographic Association, American Association of the History of Medicine, American Association for the Advancement of Science, New England Obstetrical and Gynecological Society, of which he had been president in 1947-1948, American Society of Anesthesiologists, and New England Surgical Society; fellow of the American College of Surgeons; was a fellow in surgery at the Mayo Foundation in Rochester, Minn., and president of the Alumni Association of the Mayo Foundation; director and surgeon, Fallon Clinic; president of the staff and surgeon at St. Vincent Hospital, trustee of the Boston Medical Library and consulting librarian, Worcester Medical Library; in 1942 received the honorary degree of doctor of science from Holy Cross College; died in Shrewsbury June 21, aged 49, of coronary insufficiency.

O'Shea, John Henry ✠ Spokane, Wash.; Harvard Medical School, Boston, 1905; member of the House of Delegates of the American Medical Association from 1929 through 1947 and member of the Judicial Council from 1933 to 1949; past president of the Washington State Medical Association; member of the North Pacific Surgical Association and the American Association for the Surgery of Trauma; fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; president of the board of regents of Gonzaga University; served on the staff of Sacred Heart Hospital, where he died July 18, aged 68, of mesenteric thrombosis.

Buda, Alfred Marion ✠ Brooklyn; born in New York, Aug. 8, 1896; University and Bellevue Hospital Medical College, New York, 1920; specialist certified by the American Board of Surgery and the American Board of Proctology; member of the American Proctologic Society; fellow of the International College of Surgeons and the American College of Surgeons; clinical instructor in the department of surgery at the Long Island College of Medicine; at various times on the staffs of Bushwick, St. Anthony's, Kingston Avenue and St. Mary's hospitals; died in Doylestown, Pa., June 4, aged 54, of injuries received in an automobile accident.

Imboden, Harry Miles ✠ New York; born in Lebanon, Pa., Aug. 23, 1878; Jefferson Medical College of Philadelphia, 1903; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society and the American College of Radiology; at one time on the faculty of Cornell University Medical College; consulting roentgenologist, Beekman-Downtown Hospital, Knickerbocker Hospital, and the Memorial Center for Cancer and Allied Diseases, all in New York, Mount Vernon (N. Y.) Hospital, and the Flushing (N. Y.) Hospital and Dispensary; died in New Rochelle (N. Y.) Hospital June 13, aged 72, of uremia.

Gray, Alfred William, Elm Grove, Wis., born in Milwaukee Sept. 26, 1873; Columbia University College of Physicians and Surgeons, New York, 1899; at one time secretary and president of the Medical Society of Milwaukee County; fellow of the American College of Physicians; member of the American Medical Association; specialist certified by the American Board of Internal Medicine; served during World War I; consultant, Milwaukee Children's Hospital; member of the staff, Columbia Hospital, where he died June 24, aged 77, of uremia and arteriosclerosis.

✠ Indicates Fellow of the American Medical Association.

Baer, Samuel W., South Bend, Ind.; Illinois Medical College, Chicago, 1906; died July 7, aged 88, of cardiac decompensation.

Barfield, Joseph Rex, Ocala, Fla.; Atlanta College of Physicians and Surgeons, 1913; member of the Medical Association of Georgia and the American Medical Association; died May 1, aged 69, of acute coronary occlusion.

Beck, Horace Richard ✠ Los Angeles; College of Physicians and Surgeons, Los Angeles, 1914; draft examiner during World War I; for many years examiner for the Metropolitan Life Insurance Company; died in Bryce Canyon, Utah, June 23, aged 67, of coronary thrombosis.

Bloch, Oscar Edgeworth ✠ Louisville, Ky.; University of Louisville Medical Department, 1893; at one time affiliated with the U. S. Public Health Service; fellow of the American College of Surgeons; served overseas during World War I; formerly on the faculty of his alma mater; for many years on the staff of Jewish Hospital; died June 23, aged 79.

Boeck, John, Boise, Idaho; Colorado School of Medicine, Boulder, 1901; member of the American Medical Association; affiliated with St. Alphonsus Hospital and St. Luke's Hospital; died June 25, aged 89, of pneumonia.

Coleman, William Walter, Lincoln, Ill.; Missouri Medical College, St. Louis, 1899; member of the American Medical Association; past president of the Logan County Medical Society; member of the board of directors of Deaconess Hospital; served in France during World War I; died June 28, aged 76, following a cerebral vascular accident.

Collins, James, Freehold, N. J.; Medico-Chirurgical College of Philadelphia, 1906; died May 16, aged 73, of coronary thrombosis.

Copeland, Henry W., Griffin, Ga.; Atlanta College of Physicians and Surgeons, 1901; member of the American Medical Association; died June 4, aged 73, of acute myocardial insufficiency.

Cormier, Evariste Alfred, Pawtucket, R. I.; Tufts College Medical School, Boston, 1920; member of the American Medical Association; fellow of the American College of Surgeons; chief of staff, Notre Dame Hospital, Central Falls, where he died June 23, aged 58, of uremia secondary to heart disease.

Darden, James B., Petersburg, Va.; Meharry Medical College, Nashville, Tenn., 1912; died in Beth Israel Hospital, Newark, N. J., June 27, aged 70, of hypertensive heart disease.

Darlington, Emlen Painter, New Lisbon, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the American Medical Association; past president of the American Entomological Society; a member of the board of managers of Newcomb Hospital in New Lisbon; honorary member of the medical staff of Burlington County Hospital in Mount Holly; died May 14, aged 77, of cerebral hemorrhage.

Davidson, Donald Robert ✠ Hancock, N. Y.; Syracuse University College of Medicine, 1917; served during World War I; died in St. Luke's Hospital, Utica, June 26, aged 59, of subdural hematoma.

Davis, Will Charles ✠ Portland, Ore.; University of Oregon Medical School, Portland, 1939; specialist certified by the American Board of Dermatology and Syphilology; clinical associate in dermatology and syphilology at his alma mater; formerly fellow in dermatology and syphilology of the Mayo Foundation in Rochester, Minn.; affiliated with Good Samaritan Hospital, Physicians and Surgeons Hospital, and St. Vincent's Hospital, where he died June 23, aged 38, of renal tuberculosis.

Duke, Benjamin Earl, Decatur, Ind.; University of Louisville (Ky.) School of Medicine, 1925; member of the American Medical Association; affiliated with Adams County Memorial Hospital, where he died June 15, aged 50, of cerebral hemorrhage.

Duncan, William Francis ✠ Aurora, Ind.; Miami Medical College, Cincinnati, 1892; an Associate Fellow of the American Medical Association; died in Christ Hospital, Cincinnati, June 29, aged 86, of possible carcinoma of the pancreas.

Elliott, Frank B., Blytheville, Ark.; Gate City Medical College, Texarkana, Ark., 1905; died June 23, aged 73, of cardiac asthma.

Epstein, Hyman Jacob, New York; Long Island College Hospital, Brooklyn, 1906; member of the American Medical Association; served as president of the North Bronx Medical Society and the Bronx County Gynecological and Obstetrical Society; for many years affiliated with Bronx Hospital; died June 30, aged 74.

Ferguson, Robert James ✠ Ashland, Ohio; Ohio State University College of Medicine, Columbus, 1941; president of the Ashland County Medical Society; served during World War II and received numerous citations; interned at St. Francis Hospital in New York and People's Hospital in Akron; formerly a resident at St. Francis Hospital in Columbus; died June 14, aged 37, of injuries received in an automobile accident.

Field, David, New York; Medizinische Fakultät der Universität, Wien, Austria, 1929; member of the American Medical Association; affiliated with Morrisania City Hospital; died in Lebanon Hospital, May 12, aged 62.

Finkelstein, Malvin, Jersey City, N. J.; University of California Medical School, San Francisco, 1942; member of the American Medical Association; specialist certified by the American Board of Pediatrics; served during World War II; affiliated with Fairmount Hospital, Christ Hospital, and Greenville Hospital in Jersey City and the Babies' Hospital in Newark; died June 20, aged 33, of acute coronary occlusion.

Fischer, John Somerville, Ventnor, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1903; died June 2, aged 74, of acute coronary occlusion.

Fitzhugh, William DeHart, Roanoke, Va.; George Washington University School of Medicine, Washington, D. C., 1912; died April 11, aged 69, of cirrhosis of the liver.

Hansen, George M., Omaha; University of Nebraska College of Medicine, Omaha, 1925; member of the American Medical Association; died April 30, aged 50, of an accidental gunshot wound.

Hanson, Lawrence Charles ✠ Jefferson, Iowa; State University of Iowa College of Medicine, Iowa City, 1932; served during World War II; died in Salt Lake City, June 18, aged 42, of coronary occlusion.

Henderson, Robert James, Sunbury, Pa.; Jefferson Medical College of Philadelphia, 1892; died April 19, aged 82, of dissecting aneurysm.

Higgins, Thomas Alfred, Jersey City, N. J.; University and Bellevue Hospital Medical College, New York, 1921; member of the American Medical Association; died May 28, aged 52, of acute coronary obstruction and subacute bacterial endocarditis.

Hopkins, Arthur Warren, West Swanzey, N. H.; Dartmouth Medical School, Hanover, N. H., 1903; member of the American Medical Association; for many years on the town board of education; died April 30, aged 74, of pulmonary embolism.

Johnson, William Throckmorton, Swarthmore, Pa.; Medico-Chirurgical College of Philadelphia, 1909; member of the American Medical Association; at one time on the faculty of the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; died April 17, aged 79, of hypertensive heart disease.

King, William Eugene, Aynor, S. C.; Medical College of the State of South Carolina, Charleston, 1914; affiliated with Mullins (S. C.) Hospital; died in Murrell's Inlet, May 27, aged 63, of coronary thrombosis.

Klatt, Emil Henry ✠ Galveston, Texas; University of Texas School of Medicine, Galveston, 1926; assistant professor of dermatology and syphilology at his alma mater; served during World War I; past president of the Galveston County Medical Society; president of the staff of St. Mary's Infirmary; served as associate medical director for the American National Insurance Company; died May 28, aged 51, of coronary occlusion.

Knowles, Frederick ✠ Sea Girt, N. J.; Columbia University College of Physicians and Surgeons, New York, 1900; member of the Medical Society of the State of New York; died May 2, aged 76, of cerebral thrombosis.

La Belle, Urgele Alexandre, Springfield, Mass; School of Medicine and Surgery of Montreal, Canada, 1898; died April 22, aged 77, of cardiovascular disease.

Ploch, Bernard ✠ St. Louis; St. Louis University School of Medicine, 1924; member of the American Society of Anesthesiologists; on the staff of St. Anthony's Hospital; died June 2, aged 64, of heart disease.

Pollard, Donald W. ✠ Minneapolis; University of Minnesota Medical School, Minneapolis, 1927; served during World War II; for many years superintendent of the Minneapolis General Hospital, where he died June 27, aged 49, of cardiac tamponade and myocardial infarction.

Price, Norman Wellington, Niagara Falls, N. Y.; University of Toronto Faculty of Medicine, 1896; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; affiliated with Mount St. Mary's Hospital and the Niagara Falls Memorial Hospital, where he died April 18, aged 82, of myocardial infarction.

Runyon, Charles A., Carthage, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1884; served on the staffs of St. Joseph's Hospital in Keokuk, Iowa, and the Memorial Hospital, where he died recently, aged 89, of myocarditis.

Rushing, Finis Ewing, Tulsa, Okla.; University of Arkansas School of Medicine, Little Rock, 1912; member of the American Medical Association; affiliated with St. John's Hospital; died June 4, aged 63, of coronary thrombosis.

Schwartz, Leon B., New York; Long Island College Hospital, Brooklyn, 1916; member of the American Medical Association; died in Montefiore Hospital for Chronic Diseases, June 10, aged 65, of coronary disease.

Sedgwick, Howard M. ✠ Peoria, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; died June 9, aged 84, of cerebrovascular thrombosis.

Sellew, Robert Cowan ✠ Canaan, Conn.; Yale University School of Medicine, New Haven, 1898; past president of the Litchfield County Medical Society; health officer and medical examiner for North Canaan; died in Fairview Hospital, Great Barrington, Mass., May 30, aged 76.

Shaw, Percy Howland, Philadelphia; Medico-Chirurgical College of Philadelphia, 1910; also a graduate in pharmacy; member of the American Medical Association; for many years on the board of education; on the staffs of Chestnut Hill and Germantown hospitals; died June 9, aged 63, of cerebral hemorrhage.

Smith, George Wildman, Orange, Calif.; Chicago Homeopathic Medical College, 1901; member of the Kansas Medical Society and the American Medical Association; died June 20, aged 77, of carcinoma.

Spring, John A., Montrose, Colo.; Central Medical College of St. Joseph, Mo., 1903; member of the American Medical Association; died June 20, aged 74.

Spruell, William Hugh ✠ Russellville, Ala.; University of Tennessee College of Medicine, Memphis, 1934; member of the Southeastern Surgical Congress; served during World War II; part owner of the Franklin County Hospital; killed June 19, aged 44, when his private plane crashed.

Stirling, Warren, Butler, Pa.; Medico-Chirurgical College of Philadelphia, 1911; formerly professor of anatomy and histology at Temple University School of Medicine in Philadelphia; served during World War II; affiliated with the Veterans Administration Hospital; died in Civic Hospital, North Bay, Ont., Canada, July 8, aged 63, of coronary occlusion.

Tigert, Russell, Soda Springs, Idaho; College of Physicians and Surgeons, Memphis, Tenn., 1910; member of the American Medical Association; county health officer; on the staff of Caribou County Hospital, where he died June 26, aged 64, of injuries received in an automobile accident.

GOVERNMENT SERVICES

ARMY

International Industrial Medical Congress.—Official representative of the Army Medical Service at the 10th Annual International Congress of Industrial Medicine to be held in Lisbon, Portugal, Sept. 9-15 will be Col. Wesley C. Cox, commanding officer of the Army environmental health laboratory and consultant to the Surgeon General of the Army on occupational health and hygiene. This international assembly of leaders in the field of industrial medicine is private rather than governmental, although public officials and agencies cooperate in its sessions. It is estimated that more than 600 scientists will convene from Europe and North and South America, but no requests to attend the meeting have been received from countries within the Communist orbit. The congress program includes discussions on social protection of the worker, industrial hygiene, and the pathology of work.

Research on Ryukyu Islands.—A $100,000 program of scientific investigation in the Ryukyu Islands, designed to rehabilitate the health and economy of the islands, has been started by the Department of the Army in cooperation with the Pacific Science Board of the National Research Council.

Nine prominent scientists have been selected to conduct research and to give advice in the fields of public health, food and natural resources, and civil information and education. Among them are Dr. Robert R. Trotter of the Massachusetts Eye and Ear Infirmary, who will work on problems of eye diseases, and Albert V. Saleeby of Hopewell, Va., formerly with the Atomic Bomb Casualty Committee in Japan, who will conduct a parasitological survey. Plant, animal, and insect surveys will be carried out by other members of the group.

NAVY

Aviation Medicine Program.—On Aug. 17 the Naval School of Aviation Medicine at Pensacola, Fla., presented to its students, faculty, and guests from the Pensacola Naval Hospital another distinguished speaker, Col. Victor A. Byrnes, USAF (MC), head of the department of ophthalmology at the Air Force School of Aviation Medicine, Randolph Field, Texas. This was a continuation of a program bringing outstanding men in the various clinical specialties to the naval school. Colonel Byrnes, who is chairman of the Armed Forces National Research Council Vision Committee, spoke on "Ophthalmological Problems Occurring in Major Disasters."

Specialists in Navy Medical Corps.—Since February, 1950, 89 naval medical officers have been certified in various specialties, and 47 have passed part I of their board examinations. There are presently on duty 293 Navy medical officers certified by the American Board in the following specialties: anesthesia, four; dermatology and syphilology, 11; gastroenterology, one; internal medicine, 32; obstetrics and gynecology, 24; ophthalmology, 25; otolaryngology, 25; pathology, 20; pediatrics, 12; preventive medicine and public health, 16; psychiatry and neurology, 43; radiology, 23; urology, 13; surgery, 30; orthopedic surgery, 10; plastic surgery, one; neurosurgery, one, and thoracic surgery, two.

Bio Sciences Group Establishes Clinical Branch.—The biological sciences division of the Bio Sciences Group, Office of Naval Research, has established a clinical branch headed by Capt. J. A. C. Gray, (MC) USN. The duties of the Clinical Branch will include liaison with the Bureau of Medicine and Surgery, handling of a more applied program for the Office of Naval Research, and interpretation and application of fundamental research to Navy needs. The Bio Sciences Group, which is divided into the biological sciences division and the human resources division, now has 10 branches. In the biological sciences division are the physiology, biochemistry, microbiology, biology, dental, and clinical branches. In the human resources division are the human relations, psychophysiology, manpower and personnel, and training branches. Capt. C. W. Shilling heads the Bio Sciences Group, while Drs. Orr E. Reynolds and J. W. MacMillan are directors of the two divisions.

Naval School of Aviation Medicine.—The research department of the Naval School of Aviation Medicine, NAS, Pensacola, Fla., reports the following changes in personnel.

Lt. (J.G.) J. L. Cannon, MC, USNR, a graduate of the 59th class of the school, has joined the department to assist Capt. Ashton Graybiel in cardiovascular research. Comdr. E. G. Hurlburt, MC, USN, instructor in dermatology, has been detached for duty as senior medical officer aboard the USS *Leyte*. Capt. H. J. Rickard, MC, USN, has reported to the medical department, NAS, Pensacola, to become senior medical officer of the Air Station. Capt. Rickard formerly served in the same capacity at the NAS in Atlantic City. He relieves Comdr. M. H. Goodwin, MC, USN, who reports to the Bureau of Aeronautics in Washington as liaison officer for the Bureau of Medicine. Comdr. E. E. Hedblom, MC, USN, senior medical officer at the Naval Air Administration Service, Whiting Field, departs for duty with the Pacific Medical Air Transport Service at Hickam Field, and will be relieved by Comdr. C. L. Rickard, MC, USN, who comes from the USS *Leyte*.

Naval Hospital Addition.—A 15 million dollar addition to the Naval Hospital at St. Albans, Queens, N. Y., was dedicated Aug. 15. The new building, representing the largest single contract for hospitals ever made by the Navy, will accommodate more than 600 patients. In the event of an atomic emergency the addition along with the present temporary structures erected in World War II are expected to be able to care for 4,500 patients. Rear Adm. Lamont Pugh, the Navy's Surgeon General, delivered the dedicatory address at ceremonies attended by high-ranking military officers, and congressional, civic, and medical representatives.

AIR FORCE

Special Assistant Named to Surgeon General.—Col. Jack Buel, USAF (MSC), has become special assistant to the Surgeon General of the Air Force. He assumes major administrative duties on behalf of the Office of the Surgeon General. Colonel Buel has been deputy for research to the USAF School of Aviation Medicine, research advisor, and chief of the department of psychology. He recently was the Air Force representative in the group working on "human behavior under conditions of military service" for the Office of the Secretary of Defense.

New Aviation Medical Examiners.—Seventy-one medical officers of the U. S. Air Force received diplomas Aug. 18 at graduation exercises of the School of Aviation Medicine held in the Randolph Field, Texas, officers club. Guest speaker was Maj. Gen. Dan C. Ogle, Deputy Surgeon General of the U. S. Air Force. The diplomas, designating each officer as an Aviation Medical Examiner, were presented by Brig. Gen. Otis O. Benson Jr., commandant of the aeromedical school. The student officers will not actually acquire the AME rating until they have successfully completed a three-months supervised preceptorship in the field. During this period each must conduct 50 physical examinations for flying and log 25 hours of flying time in military aircraft. They will then be qualified for duty with Air Force units, where their primary mission will be to conduct physical examinations for flying. The preceptorship requirements were added last September when the AME course was shortened from 11 to six weeks due to the urgent need for medical officers in the Air Force. Following completion of their preceptorships, the graduates can qualify for the rating of Flight Surgeon on serv-

ing an additional year in the field, and on receiving a proper recommendation.

The majority of the student officers were first lieutenants, 15 of whom received promotion to captain after entering the school. The total group included four regular, one National Guard, and 66 reserve officers. This graduation brought to 333 the number of AME graduates at the School of Aviation Medicine since Jan. 1. It was the largest class since World War II.

Medical Examiners' Tour.—A 10-day postgraduate tour of four of the leading Air Force technical bases was begun Aug. 20 by 15 members of the Aviation Medical Examiner class of the School of Aviation Medicine. Members of the party were especially selected from among the 71 medical officers who graduated from the AME course Aug. 18. All but three of the 15 were rated officers, and their selection was based on this rated experience or continued specialized study in aviation medicine. Starting from Randolph Field the group flew first to Elgin Field, Fla., where for two days they observed the giant cold weather hangar and various operational tests. Next, they visited Wright-Patterson AFB, Ohio, for a four-day study of facilities and developments of special concern to pilot doctors. Proceeding then to the west coast, the group visited Travis AFB to observe all phases of air evacuation, and then went to Edwards AFB at Muroc, where they studied deceleration tests and experimental aircraft. Project officer in charge of the medical group was Capt. Alonzo M. Donnell Jr.

PUBLIC HEALTH SERVICE

Community Mental Health Program.—The importance of community services to a program to improve mental health is highlighted in the third annual report of the Prince George's County Mental Health Clinic. The clinic was established in 1948 by the Public Health Service as a demonstration of how a mental health program could be planned within the framework of a general local health program. Through an exchange of information with other mental health workers the center has gained a considerable fund of information on the methods and types of programs most suitable for different types of communities.

Preservation and improvement of mental health in a community, the clinic has found, is basically dependent on the effective utilization of community services for health, welfare, and education before adjustment difficulties become serious. Important components in any preventive program are special classes in schools, school testing programs, good foster home programs, careful placement and adoption services, children's protective services, family service agencies, institutional facilities for retarded children, and specialized mental hygiene services.

The clinic worked on several special projects during the year with the county department of education and the county health department. One of these was the preparation of a mental health section, including a description of symptoms of pupil maladjustment, in the teachers' health manual. Another was a study to determine how teachers could recognize problems of adjustment facing the school child. A project for the early recognition and alleviation of anxiety-producing situations in mothers and children was continued in the prenatal and well-baby clinics. Another project consisted of a series of seminars to inform the medical personnel of the local telephone company about the relationship of absenteeism and symptoms of maladjustment.

Dr. Halverson to Head Inter-American Survey.—Appointment of Dr. Wilton L. Halverson of California to head a special joint survey to evaluate the health and sanitation programs of 17 Central and South American countries was announced Aug. 21 by Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, and Kenneth R. Iverson, president of the Institute of Inter-American Affairs. Dr. Halverson has been given a six-months' leave of absence from his position as director of Public Health of the California state health department to head the survey, which is being carried on under the supervision of the Public Health Service. His appointment to the regular corps of the Public Health Service in the permanent grade of medical director has been approved by the Senate.

The major purpose of the survey is to appraise the influence of the IIAA's nine-year health and sanitation program on the development of local health organizations, the rate at which the programs and methods are being incorporated into the permanent health structure, and the extent to which the health habits of the people are being influenced. The survey will be conducted under the direction of Assistant Surgeon General Joseph Mountin, associate director of the Bureau of State Services, Public Health Service, and Dr. H. van Zile Hyde, director of the health and sanitation division of the Institute of Inter-American Affairs. The Public Health Service is staffing and administering the survey with funds allotted by the Institute of Inter-American Affairs.

A graduate of the College of Medical Evangelists and Yale University, Dr. Halverson is a member of the National Advisory Health Council, advisory group to the Surgeon General. He is chairman of the American Public Health Association's committee on administrative practice, president of the United States-Mexico Border Health Association, past president of the State and Territorial Health Officers' Association, and a member of the scientific board of the Rockefeller Foundation.

Dental Research Program.—Whether sodium fluoride taken by pregnant women will provide protection for their offspring against tooth decay will be investigated with the aid of a grant awarded by the Dental Research Institute of the National Institutes of Health. This investigation, under the direction of Dr. Reuben Feltman of the Passaic General Hospital, Passaic, N. J., will attempt to establish whether a fluorine solution administered during pregnancy transfers the fluorine to the fetal bloodstream and whether such transference is beneficial. Surveys previously made in South Africa have shown that the baby teeth of children whose mothers had fluorine in drinking water during pregnancy were remarkably free from tooth decay. Sodium fluoride (one part to a million parts of water) provides about 65% protection against dental caries for those children who have received it since infancy.

Under a grant made to Dr. S. J. Kreshover of the Medical College of Virginia in Richmond, investigation will be made of the effect of prenatal disturbances on the teeth and dental tissues of children. Other grants totalling $179,878 will be devoted to the investigation of such problems as the periodental diseases, calcification, malocclusion, and growth changes in the head, face, and teeth during the period of changing dentition.

Cancer Morbidity Survey.—The incidence rate of newly diagnosed cancer among residents of New Orleans increased 11% from 1937 to 1947, according to a survey made by the Cancer Institute of the National Institutes of Health at Bethesda, Md. The New Orleans survey was carried out in cooperation with the Orleans Parish Medical Society, New Orleans Hospital Council, and the Louisiana State Department of Public Health. It is the third in a series of cancer morbidity studies covering 10 representative metropolitan areas in the United States. Already published are studies dealing with the Atlanta and the San Francisco areas, both of which also revealed increases in cancer incidence. In Atlanta and San Francisco as well as in New Orleans, Public Health cancer authorities attribute some of the increase to improvements in diagnosis, reporting, and case finding.

Remaining surveys will deal with Birmingham, Chicago, Dallas, Denver, Detroit, Philadelphia, and Pittsburgh. Comparative data are available for the 10-year period because all the areas were originally surveyed in 1937-1939. When the individual reports are completed, Cancer Institute statisticians will prepare a summary report for the nation as a whole. Copies of the survey may be obtained from the National Cancer Institute, National Institutes of Health, Bethesda 14, Md.

Deadline for Research Grant Applications.—Dr. W. H. Sabrell Jr., director of the National Institutes of Health, stated that Nov. 1, 1951, is the deadline for the first group of Public Health Service grants to be awarded for the 1952-53 fiscal year. The grants will be reviewed by the national advisory councils next February. Closing date for applications to be considered at the June council meetings is March 1, 1952. Applications for research grants should be addressed to the Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

FOREIGN LETTERS

PARIS

Fetal Malformation.—The role of infections and vascular disorders in the genesis of fetal malformations and the protection of the mother and fetus were discussed at a recent meeting of the National Academy of Medicine. An interesting discussion followed a report by Prof. Piédelièvre on therapeutic abortion. French law allows the interruption of pregnancy only if the mother's life is imperiled, but the pathologic consequences of a pregnancy for the mother and the possibility of an ill-fated procreation caused the subject to be reconsidered. Prof. Cathala, who had already mentioned, at the Society for Legal Medicine, the consequences for the fetus of rubella in the mother early in pregnancy, reiterated that certain infections are suspected of giving rise to agenesis, malformation, and sensory disturbances. He had seen two cases of microcephalus following acute benign infectious jaundice in the fourth month of pregnancy, but he also saw four women with icterus in the course of their pregnancy who gave birth to normal children. Varicella, measles, scarlet fever, and herpes zoster may also provoke abortion or fetal malformation during the first two or three months of pregnancy. A commission was appointed for the study of the problem.

Seriousness for the Fetus of Unapparent Disease of the Mother.—A. and P. Giroud, M. Martinet and R. Vargues have endeavored to find the cause of unapparent infections in the mother that are recognized only by serological tests and other laboratory examinations. They inoculated rats between the sixth and eleventh day of gestation with Rickettsia prowazeckii, the causative agent of epidemic typhus, an unapparent disease in rats and noticeable only by seroagglutination (at 320), and the presence of rickettsias in peritoneal smears. The rats were killed on the twenty-first day of gestation. One day prior to delivery, experiments showed a large number of abortions, or rather resorption of embryos. Abortion did not occur in the controls, who had an average of nine fetuses against 3.9 for inoculated animals. A cleft palate (similar to that induced by avitaminosis B) was noted in one of the inoculated embryos; the authors thought it due to infection. This anomaly has, hitherto, never been observed either as spontaneous or hereditary. The authors believe that the high incidence of abortion and growth impairment of the embryos in these experiments indicates that, in women, clinically latent diseases may have serious consequences for the fetus. Prof. R. Debré pointed out that in some quarters it is believed that lesions of embryos may be due to the presence of antibodies developed in the mother.

Circulatory Disturbances in the Genesis of Congenital Malformations.—P. Lombard (Algiers) studied this problem for the first time and concluded that all so-called amniotic malformations result from a cicatricial process, itself evidence of a prior ischemic necrosis. Spasm of a large vessel may interfere with the circulation of a limb, resulting in "amniotic amputation." Certain atresias of the colon and small intestines and anorectal malformations may be due to a similar phenomenon. Prof. Courrier observed similar necrotic phenomena in animals. His pupil, A. Jos of the faculty of sciences, is conducting experimental research on vascular spasm related to the posterior lobe of the pituitary. Lombard stresses the necessity of biologic research to determine at what period of intrauterine life these vascular disorders may occur. The coincidence of an emotional episode in the mother with a fetal malformation may be explained by a sudden discharge of pituitary and adrenal hormones. A systematic study of the mother's hormonal secretions may lead to a means of preventing congenital malformations.

Blood Incompatibilities and Mental Retardation.—P. Desclaux, A. Soulairac, and Mlle. Morlon resumed the study of rhesus incompatibility on a series of more than 100 retarded persons and extended it to ABO and MN factors. Forty-four cases of incompatibility were noted, whereas there were only 23 in a control population. Only a small number of incompatible children showed neurologic syndromes.

ISRAEL

Problems of Tropical Medicine in Israel.—In a lecture delivered before the Jerusalem Branch of the Israel Medical Association, Dr. M. Yoeli of the Hebrew University Medical School stressed the increasing importance of tropical diseases as a serious menace to the health of the population in Israel. In his lecture, "Antibiotics in Tropical Medicine," he gave a historical review of the development of the antibiotics and their place in the treatment and prophylaxis of some endemic and epidemic diseases of the warm climates. He showed, with diagrams and charts, that, although antibiotics have revolutionized the treatment of a few tropical diseases, such as typhus, brucellosis, and some spirochetal infections, the bulk of infectious diseases caused by protozoa or worms and most of the small virus infections have not been affected. Dr. Yoeli suggestèd a more cautious and critical approach to the evaluation of new chemotherapeutic agents and antibiotics and hoped to see more prolonged observations on the true value of many "drugs of choice."

Reviewing some research work on antibiotics performed in the department of parasitology of the Hebrew University, by Prof. S. Adler and his associates, Dr. Yoeli gave an account of the excellent results obtained with terramycin in Mediterranean tick-borne relapsing fever.

Until the introduction of terramycin, no specific drug was available in infections caused by Spirochaeta persica, the causal organism of Mediterranean relapsing fever. The disease, which is endemic throughout the Near and Middle East, may produce one to 16 attacks, tends to be severe and neurotropic, and may involve the eye. In rats subjected to splenectomy, the curative dose of terramycin, by intraperitoneal injection, was found to be about 40 mg. per kilogram of body weight. Animals cured during the patent period show no residual brain infection. The residual brain infection can be eradicated by 60 mg. or more per kilogram of body weight within 50 to 100 days after the termination of the patent infection. Cures are achieved by oral medication with doses of 200 mg. per kilogram of body weight. In five human cases of relapsing fever, eradication of the infection was achieved with oral doses of 3 gm. daily for five days.

Encouraging results were obtained with terramycin in experimental infections of local leptospirosis. The reservoir of the infection is the local Palestine vole, Microtus gunteri. The organism was isolated from the vole and from humans and identified as Leptospira geffen. (Olejnik and Shneyerson, *Nature* **166:**526 [Sept. 23] 1950). In a large number of experiments, terramycin showed specific therapeutic and prophylactic action.

Textbook descriptions of tropical diseases are at variance with clinical and field observations in epidemiology and vectors in the Mediterranean area (Near and Middle East). In this vast region, stretching from Cyprus toward Asiatic Russia, specific epidemiology of many tropical diseases has been observed. During World War II, medical officers of the Allied Armies had ample opportunity for study; they ascertained that knowledge gained in London, Amsterdam, and New Orleans differed from the picture they saw in the Near and Middle East.

The mass immigration of Jews from backward eastern countries to a country that has many potential vectors has brought the problem of tropical diseases to the fore. The establishment

The items in these letters are contributed by regular correspondents in the various foreign countries.

of a postgraduate school of tropical medicine is of utmost importance. The departments of bacteriology and parasitology of the Hebrew University and the different clinical departments of the Hebrew University Medical School have been doing a great deal of research work on the various aspects of tropical medicine within their region. Some important contributions on the epidemiology of different insect-borne diseases have been made by the Hebrew University. Within the Medical Faculty of Jerusalem, there is a strong nucleus of scientists that could form the framework of a school of hygiene and tropical medicine to serve Israel and the whole Near and Middle East.

Congress for the History of Medicine and Natural Sciences in Israel.—The second Congress convened in Tel-Aviv in May, 1951, under the chairmanship of Prof. Bodenheimer, Jerusalem, and in the presence of many guests from other countries. The main speaker was Dr. S. Munther, who spoke about the Jewish-Persian physician Ibn Sinai, known in the literature under the Latin name of Avicenna. Ibn Sinai, who greatly influenced medicine of the Middle Ages, was born just a thousand years ago. The most important work of Ibn Sinai is the "Canon Avicennae," which is the only great printed medical work of that time; it was published in Naples in 1491. All other medical works of that period were handwritten.

Dr. J. Leibowitsch spoke on the importance of the physician Sacutus Lusitanus, who had translated Dioscorides into Latin. He himself was a Maranno of Portuguese descent, who, expelled from his homeland, was converted to Judaism and then practiced medicine at Ragusa.

An interesting discourse about popular medicine among the Hassidim (orthodox Jews) was made by Dr. Margalit. Dr. Plaschkes spoke on the importance of Thomas Hodgkin, who was physician to Sir Montefiori. Within the course of the congress, the grave of Hodgkin, who died at Jaffa in 1866, was visited. The graves of Dr. Max Nordau and Dr. Saul Czernichowski, two distinguished physicians of the early Zionist era, were also visited.

The congress adopted a resolution to publish a quarterly periodical in Hebrew. The next International Congress of the History of Medicine, in 1953, may convene in Jerusalem.

SPAIN

Congress of the Society of Gerontology.—The first Congress of the Spanish Society of Gerontology was held in Barcelona in June, 1950. Dr. A. Pedro y Pons, professor of internal medicine at the University of Barcelona, presided, and the attendance of over 300 was unexpectedly large for a nation with a relatively small number of medical schools. Dr. R. Navarro Gutierrez (professor at the National School of Phthisiology) and Dr. J. L. Alvarez Sala (assistant professor in the faculty of medicine), both of Madrid, reported on pulmonary tuberculosis in the aged. Some of their conclusions follow.

Conditions in the aged that influence the course of tuberculosis include circulatory, renal, and hepatic affections, intermediate metabolic processes, and lowered immunity. In the aged, the forms of tuberculosis are, on the whole, similar to those found in other periods of life. Greater accuracy in diagnosis as well as wider use of the latest therapeutic resources is desirable. In principle, there is no contraindication to the use of modern therapeutics in the aged. It is, however, necessary to judge the indications with extreme care, after first carefully studying all vital systems and organs.

The large number of aged patients with the chronic forms of pulmonary tuberculosis raises an important social problem. Senile tuberculosis may cause disablement before the compulsory retirement age is reached, so that it is extremely desirable that suitable legislation be studied in this connection.

Public health bodies must be required to give special attention to the problems of senile tuberculosis, since such chronic forms are generally open and represent one of the greatest sources of danger in the spread of the disease. Special institutions should be set up to study and control tuberculosis in older persons. It would also be useful from the viewpoint of geriatric science to have one or more sanitariums exclusively for aged tuberculous patients. The Spanish Society of Gerontology should request a seat on the Disabled Persons' Trust and must work to spread knowledge among physicians concerning senile tuberculosis.

The second official discussion, led by Prof. C. Blanco Soler, of San José y Santa Adela Hospital, Madrid, dealt with diabetes mellitus in the aged. Prof. Blanco Soler emphasized the mildness of senile diabetes and the advisability of prescribing rather liberal diets, whenever there are no complications (those prognostically unfavorable for aged diabetics, e. g., infections, vascular and renal sclerosis, and hypertension.

The third discussion, in which Drs. M. Pañella Cases (chief of the geriatric department of Nuestra Señora de la Esperanza Hospital, Barcelona) and J. Monteys Porta (from the same hospital) were the moderators, dealt with senile osteoporosis. Following are some of the conclusions that were drawn. Senile osteoporosis is a generalized osteopathy, of a rarefying kind, characterized by the decrease and thinning of the osseous trabecula with widening of the medullary spaces. The primary disorder consists of insufficient formation of the protein matrix with persistent reabsorptive phenomena. The confusion of terms and concepts that exists in the literature on this subject must be resolved. The name osteoporosis has been given to such different processes as osteomalacia and fibrous osteosis. This must be avoided, as well as the use of other inaccurate terms, like decalcification, deossification, atrophy, osteolysis, and halisteresis, which have been applied to the process under discussion.

The pathological anatomy of senile osteoporosis is in no way different from that found in other osteoporizing processes (Cushing's syndrome, menopause, hypogonadism, and adaptation syndrome). The macroscopic pathological anatomy of senile osteoporosis differs from the above processes only in that the so-called fish vertebras—frequently described as characteristic lesions of osteoporosis in general—are not often found. This is probably due to the fact that, in the aged, the intervertebral disc loses its capacity for expansion and thus causes a sinking of both vertebral platforms.

Senile osteoporosis is commonest in women. Postmenopausal and senile osteoporosis seem to be the same process. Senile osteoporosis is an involutive process, but hormonal factors probably influence the time of its appearance and its intensity. It does not seem to be related to any disturbance of mineral metabolism or to lack of vitamin D, nor is there any proved connection with any disturbance of protein metabolism. Vitamin C, which seems to play a part in the formation of collagenous material, may have some effect on the defective formation of the protein matrix, though lack of vitamin C is not a crucial factor in senile osteoporosis.

Senile osteoporosis may be asymptomatic, but its clinical manifestations are usually those of the spinal lesions, i. e., kyphosis, rigidness, and rachialgia, and various lesions of the kind wrongly called spontaneous. The clinical picture, however, is not characteristic. Osteoporosis is painless in itself, but there may be pain from vertebral complications.

The diagnosis is still primarily radiological. Tests for calcium, phosphorus, and phosphatase levels are not valuable diagnostically, except in the exclusion of other rarifying osteopathies, which cause obvious changes in one or several of these biochemical constants. The most important and difficult differential diagnosis is senile osteomalacia.

Treatment is uncertain and aimed at relieving pain, correcting deformities, and restoring the bone to normal by promoting trabecular formation. Treatment with phosphorus, calcium, and vitamin D does not seem to be sufficiently efficacious. As in other types of osteoporosis, treatment with steroid substances proves useless. Senile osteoporosis seems to be a nonreversible process, but, in general, the less advanced the course and the more acute the onset, the more it improves with treatment. Preparations of amino acids and vitamin C should be given. The treatment of the pain is rest and that of the deformity must be orthopedic.

The congress opened with a lecture by Prof. A. Pedro y Pons on senile encephalopathy. It closed with a lecture by Prof. G. Marañon, professor of endocrinology in the University of Madrid, entitled "From Climacteric to Senility."

CORRESPONDENCE

CHANGE IN SIZE OF MEDICINE BOTTLES

The Editor of THE JOURNAL *has been requested by the Council on Pharmacy and Chemistry to publish the following letter and to request the readers of* THE JOURNAL *to inform the Council office of their experiences. Such correspondence should be directed to Dr. Robert T. Stormont, Secretary of the Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10.*—ED.

To the Editor:—During the last few years a tendency has developed for pharmaceutical houses to increase the size of eye, ear, nose, and throat medicine dropper bottles from ¼ oz. to ½ oz. and 1 oz. This tendency, in my opinion, not only is a hazard to health but also results in increased cost.

Treatment for most eye, ear, or nose diseases requires only ¼ oz. (6 to 7 cc.) of medication. If that amount does not cause considerable improvement, the treatment should be changed. I prescribe only such small amounts, but too many may use 1 oz. size bottles. At least ¾ oz. of the prescribed medicine will be left over, to be used again or to be distributed to friends in the neighborhood for similar conditions, constituting a health hazard. I saw a patient for whom a practitioner prescribed sulfonamide solution for acute conjunctivitis, which cleared up in two or three days. One of the patient's friends had an acute attack of glaucoma four months later. This woman used the sulfonamide for four days, until the pains became intolerable. Had the first patient not had such a large amount of these drops to go to waste, the second patient might have come to the doctor for proper treatment without losing any valuable time.

There is also the possibility that an infection may be carried from one patient to another by the use of the same dropper and bottle. This applies not only to eye diseases but to ear and nose diseases as well.

I would like to call the fact of the increase of the size of the original bottles to the attention of the Council of Pharmacy and Chemistry. It might be worth while to give this some serious consideration and advise the pharmaceutical houses to bottle the medication in ¼ oz. containers.

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ALKALOSIS AND HYPERVENTILATION

To the Editor:—In the July 21, 1951, edition of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, page 1125, in the article on "Alkalosis Due to Hyperventilation" the authors, Sattler, Marquardt, and Cummins, state, "A review of the literature reveals no clinical reports of hyperventilation alkalosis." In the April 22, 1922 (page 1193) edition of THE JOURNAL, I described several cases of hyperventilation alkalosis in an article entitled "Clinical Tetany by Forced Respiration." In the June, 1920, edition of the *American Journal of Physiology*, Grant and I first described the production of tetany by voluntary hyperventilation.

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DIAPHRAGMATIC FLUTTER

To the Editor:—I wish to comment on the patient with diaphragmatic flutter described by Dr. Wallie L. Craddock in the August 4 issue of THE JOURNAL, page 1315. To add to his list of hospitalizations, he was in the Massillon, Ohio, State Hospital in the latter half of 1947 or early half of 1948, and known as John Allen. He had been committed following disturbed behavior while under observation for a "heart attack" in a Warren, Ohio, hospital. He claimed to be a retired merchant seaman, and he was quite interested in flowers and working in the greenhouse. The spring of this year he was in Chicago State Hospital.

I would like to raise the question of whether his attacks are a matter of malingering as some physicians are inclined to assume. My conjecture is that they represent hysteria and that the flutter is a diaphragmatic equivalent of a hysterical convulsion. They are precipitated by emotional crises, and the resulting hospitalizations may be considered as "secondary gain." The "various theatricals" and belligerency in temper-tantrum-like episodes suggest a hysteroid personality. It is unlikely that the diaphragm can be moved as rapidly as 200 times a minute under the direct control of will, as would be the case in malingering. Personality studies, such as the Rorschach test, might throw considerable light on this case.

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VASOPRESSIN INJECTION (PITRESSIN®) AND THE INTESTINAL TRACT

To the Editor:—The reason for the experience of Drs. Slotnik and Teigland (Cardiac Accidents Following Vasopressin Injection [Pitressin®], *J. A. M. A.* **146:**1126 [July 21] 1951) can be sought in the fact that 20 units of pitressin® were injected. We regard it as a better policy to follow the advice of Goodman and Gilman, who in their textbook "The Pharmacological Basis of Therapeutics" recommend doses of 5 to 10 units to achieve the desired effect on the intestines.

The danger of excessive doses of this substance lies not only in the possibility of creating disturbances of the coronary circulation. I saw Cheyne Stokes respiration after administration of a postpituitary extract, and I witnessed the reaction of an infant who received 5 units. A prolonged period of apnea with deep cyanosis and unconsciousness left a lasting impression which one would not wish to invite again.

If a dose of pitressin® greater than 10 units is necessary for expelling gas from the intestines before cholecystography, the use of the drug in this diagnostic procedure should be abandoned. The kidney function test using postpituitary extracts which I introduced in 1921 has since been performed by many investigators without untoward side effects. This latter test, however, can be satisfactorily performed with 10 units or less (Pasqualini, R. Q.: Tubular Resorption Test: With Results Obtained in 19 Cases of Acute Nephritis, *J. Lab. & Clin. Med.* **30:**51 [Jan.] 1945).

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PLASMA L. E. TEST IN LUPUS ERYTHEMATOSUS

To the Editor:—In the editorial entitled "Plasma L. E. Test in Lupus Erythematosus" (*J. A. M. A.* **146:**819 [June 30] 1951) it is stated that Hargraves "conceived the idea" of the plasma L. E. test and that "Haserick made the same observation" one year later. While not wishing to detract from Dr. Hargraves' splendid contribution in this field, I would like to point out that the editorial omitted the following two articles by Haserick and Bortz which were prepared prior to the appearance of Dr. Hargraves' paper on April 27, 1949 (*Proc. Staff Meet. Mayo Clin.* **24:**234, 1949): (1) "Normal Bone Marrow Inclusion Phenomenon Induced by Lupus Erythematosus Plasma" (*J. Invest. Dermat.* **13:**47, 1949) submitted for publication March 25, 1949, and (2) "New Diagnostic Test for Acute Disseminated Lupus Erythematosus" (*Cleveland Clin. Quart.* **16:**158, 1949) submitted to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION on April 20, 1949.

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Medical Manuscript Editor,
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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Compensation of Physicians: Divorced Husband's Liability for Services to Child.—The plaintiff dentist sued to recover a sum of money alleged to be the reasonable value of dental services rendered to the defendant's minor child at the request of the child's mother, who is defendant's divorced wife and to whom custody of the child had been awarded by virtue of the divorce decree. From a judgment in the trial court in favor of the plaintiff, the defendant appealed to the St. Louis court of appeals, Missouri.

The child was born with a harelip and cleft palate which required surgical care and prior to the divorce the parents entered into a separation agreement by the terms of which the defendant agreed, among other things, to pay all the costs and expenses of any additional operation or operations that might be necessary on account of the child's deformity and to pay the sum of $15 a month for the child's maintenance. The divorce decree also fixed the defendant's obligation for the child's maintenance at $15 a month.

The plaintiff specializes in dental work for children, and the child in question was referred to her by the surgeon who had performed the operation to repair the harelip condition. Thirteen cavities were filled and an abscessed tooth treated and the trial court found that the work the plaintiff did was necessary and her charges reasonable. The defendant did not know the plaintiff and had had no communication with her respecting the work she did for his son. In fact, the first information he had regarding plaintiff's connection with the case was when he received a bill for her services in January, 1949, almost a year after the services were rendered.

The defendant argued that the decree of the divorce court requiring him to make monthly payments for the maintenance of the child was conclusive upon the extent of his obligation for the child's support until such time as the decree might be modified, and that the whole theory and purpose of a fixed award would be defeated if either the mother or a volunteer should be permitted to impose a liability upon him other than that imposed by the decree. If this action had been brought by the child's mother to recover for money she had personally expended in obtaining dental services for the child, said the court, it might well be argued that in such controversy between her and defendant, the provision made by the court's decree should be regarded as having fixed the measure of the defendant's liability to her for the child's maintenance, and that if the payments required by the decree were inadequate, her remedy, before making any expenditure, would have been to apply to the court for a modification of the decree upon the showing of a change in the child's condition which had made it necessary that dental services be procured. However, this action is by the dentist rendering the services. She is not a party to the decree and is therefore in no sense concluded by it. Neither is plaintiff entitled to any possible benefit to be derived from the terms of the separation agreement, which was purely a contract between the parents of the child.

If the plaintiff is to recover in this action, said the court, it must be solely on the strength of defendant's common-law liability. A father's liability to a third person for necessaries furnished his minor child is not affected by the fact that the custody of the child has been awarded to the mother. His liability is founded upon the theory of authorization; and in the absence of an express promise to pay, there must be a showing of circumstances from which a promise may be implied. Except for an emergency which renders a third person's immediate interference both reasonable and proper, an implied promise to pay for necessaries must depend upon the father's failure or refusal to supply them; and where he is ready and willing to make suitable provision for his child, there can be no recovery by a third person who has furnished the necessaries without his express authority. In other words, the basis of the father's liability is his omission to fulfill his obligation of supporting his child; and a stranger who furnishes articles or renders services to the child does so at the peril of being able to show that they were furnished under such circumstances as to have imposed a duty on the father to pay for them. Consequently the volunteer who undertakes to recover from the father has the burden of establishing, not only that the articles furnished or the services rendered were in fact necessary, but also that the father had been guilty of a manifest dereliction in failing to supply them. Here any such evidence is entirely lacking, said the court. While it would doubtless not be contended that the services which plaintiff rendered did not fall within the category of necessaries, there is nothing to indicate that the child's need for such services had ever been brought to the defendant's attention, or that he had been given any opportunity whatsoever to see that proper provision be made, as, for instance, by the selection of a competent dentist of his own choosing in his own locality. Instead it was an admitted fact that the first information he had of the matter was when he received the bill from the plaintiff long after the services had been performed. Under such circumsances there was a failure of proof upon the fundamental ground of liability.

Accordingly the judgment of the trial court in favor of the plaintiff dentist was reversed.—*Thompson v. Perr, 238 S. W. (2d) 22 (Missouri 1951).*

Malpractice: Failure to Diagnose Fracture.—The plaintiff filed suit against the defendant physicians for damages for alleged malpractice resulting in injury to her leg. From a directed verdict in favor of the defendants and a judgment overruling the plaintiff's motion for a new trial, the plaintiff appealed to the court of appeals of Georgia, division number 2.

The plaintiff fell down while at work in the apartment hotel in which she lived. One of the defendant physicians diagnosed her injury as a strained muscle, put her to bed and gave her capsules to relieve her pain. The pain persisted about two weeks, however, and at that time she was x-rayed and found to have suffered an impacted fracture of the left leg. She was then placed in a cast which she wore for some time. The end result was that the plaintiff suffered an absorption of the neck of the femur, resulting in a fibrous union at the site of the fracture and a definite shortening of the left leg. The plaintiff contended that this result was caused by the defendants in improperly diagnosing her condition and in failing to take x-rays.

The counsel for the plaintiff contended that there was both lay and medical testimony as to the negligence of the defendants. The record, said the court, does not bear out this contention. The testimony of the medical witness for the plaintiff indicated that the result of the defendants treatment of the plaintiff was that which obtained in about 20% of similar cases and that medical science does not yet know how to prevent such results. This was a question solely for expert medical evidence. A layman may testify as to results, but not as to whether treatment given in a particular case constitutes a failure on the part of physicians to use care and diligence. Since the results suffered by the plaintiff was the same as that which is obtained in 20% of all such cases regardless of any negligence on the part of the physician, the court was of the opinion that the trial court was correct in directing a verdict in favor of the defendants unless some of its special rulings relating to admissibility of evidence were wrong.

The plaintiff contended that the trial court erred in sustaining an objection by counsel for the defendants to questions propounded by the counsel for the plaintiff to the plaintiff's medical witness as to whether in his opinion it was advisable for a surgeon treating a fracture of the hip to wait two weeks before taking an x-ray. We think the objection was correctly sustained. The issue was whether the treatment given the plaintiff by the defendants measured up to the standards of care and skill ordinarily employed by the profession generally under similar conditions and like surrounding circumstances. It was not a question of what one individual doctor thought was advisable.

Accordingly the judgment of the trial court directing a verdict in favor of the defendant physicians was affirmed.—*Mayo v. McClung, 64 S.E. (2d) 330 (Georgia, 1951).*

Medical Practice Acts: Limitations on License Revocation.—The Connecticut Medical Examining Board, after a hearing on complaint of the State Commissioner of Health, revoked the plaintiff's license to practice medicine. From a judgment of the trial court in favor of the plaintiff, an appeal was taken to the Supreme Court of Errors of Connecticut.

The plaintiff's basic claim is that the recommendation of the medical examining board revoking his license was illegal because the board exceeded its authority. The statute in effect when the commissioner of health filed his complaint listed as grounds for the revocation of license, among other things, immoral, fraudulent, dishonorable or unprofessional conduct and illegal, incompetent or habitually negligent conduct in the practice of the healing arts. This enactment, said the court, was at once a grant and a limitation of power. The board was authorized to act upon any one of the enumerated grounds, but it was limited, by the failure or refusal of the legislature to add others, to those specified.

In the present case the plaintiff was subjected to a hybrid accusation. He was charged, in part, with "wanton negligence" in the practice of his profession. This charge, said the court, finds no sanction whatsoever in the statute. Whether wisely or not, the legislature has made but one form of negligence a ground for revocation. This is negligence which is characterized as habitual. All other forms, whether they are described as wanton, gross, heedless or reckless, are excluded from the statute by implication. The board was as unwarranted in finding the plaintiff guilty of wanton negligence as was the commissioner in making the charge.

The charge of wanton negligence was not set forth independently but was linked with one alleging "fraudulent, dishonorable, unprofessional and immoral conduct." Five counts were involved. The board found the subordinate facts as to each and then reached the following conclusions: (1) The plaintiff was "guilty of having treated Mrs. Everett Brady in a ruthless and wantonly negligent manner"; (2) he was "guilty of negligence in his care and treatment of Mrs. Everett Brady and her infant son"; (3) he was "guilty of treating James Nally in a careless and negligent manner and to his detriment"; (4) he was "guilty of treating Mrs. Arthur Gordon in a cruel, and grossly negligent manner and to her detriment"; and (5) he was "guilty of rendering careless and improper medical treatments to Mrs. Everett Brady and her infant son." The significance of this recital, said the Court of Errors, lies not in what it contains but rather in what it omits. No reference is made to unprofessional conduct. This omission acquires added significance from the board's statement, incorporated in its finding, that in arriving at a decision it considered "each count and allegation separately and independent of all other counts and allegations." If this statement is accepted, continued the court, as it should be, it follows that the board was unable to conclude that the plaintiff was guilty of unprofessional conduct on any one of the counts, when considered separately. Nevertheless, at the very end of its finding, the board records that its members "are in unanimous agreement that the Respondent . . . is guilty of dishonorable and unprofessional conduct." This conclusion must, then, have been reached through the cumulative effect of the findings on all the counts. Therein lies the impropriety of the board's action, said the Court of Errors. As we have pointed out, the findings of guilt based on negligence, characterized as gross, wanton or otherwise, were unlawful. In using them to reach a conclusion of guilt on the charge of unprofessional conduct, the board acted illegally.

A complaint by the department of health need not be phrased with the precision of a well-drafted pleading. It must, however, be based on the statute. Nor need a hearing before the board be marked with the formality with which a judicial trial is conducted. It is sufficient if he who is under charges has a reasonable opportunity to hear and be heard on them and if the proceedings are conducted in a fair and impartial manner. The informalities to which we refer in this case, however, must not be permitted to prejudice the rights of parties.

Accordingly the judgment of the trial court disapproving the order of revocation made by the board of medical examiners was affirmed.—*Adam v. Connecticut Medical Examining Board, 79 A. (2d) 350 (Connecticut, 1951).*

MEDICAL MOTION PICTURES

Laboratory Diagnosis of Diphtheria: Parts I, II, III, IV. 16 mm., black and white, sound. Produced in 1950 by and procurable on loan from Communicable Disease Center, 50 Seventh St., N. E., Atlanta 5, and on purchase from United World Films, 1445 Park Ave., New York 29.

Part I. *Microscopic Study and Isolation of C. Diphtheriae.* Showing time 13 min. This film deals with the laboratory diagnosis made on the basis of a culture of throat and nasal secretions. The techniques of obtaining the material, making smears and cultures, and selection of the culture medium are brought out clearly and systematically. The film shows how the laboratory procedure can be only an aid to the physician, because with the most modern technique the information can be furnished in 18 hours at the earliest. In most instances, the diagnosis must be made on the basis of what is found by physical examination. If the physician delays treatment 18 hours, the patient may benefit little. The physician may modify treatment after the report of the culture comes from the laboratory.

Part II. *Determination of Types of C. Diphtheriae.* Showing time 12 min. This film shows how the three main types of the diphtheria bacillus are identified. This is of considerable epidemiologic importance. The value of the macroscopic appearance of the colony is illustrated convincingly; the gross diagnosis of the colony, the hemolysin test, and the fermentation tests complete the identification of the type.

Part III. *Testing for Virulence in Animals.* Showing time 13 min. This film deals with the virulence test, performed preferably on rabbits. Here again, the procedure is brought out clearly. A good example of how rabbits should be handled is shown. Laboratory technicians could profit from this particular phase of the film. The occasional use of guinea pigs and of chicks is also illustrated.

Part IV. *The In Vitro Virulence Test for C. Diphtheriae.* Showing time 12 min. This film presents in great detail the in vitro virulence test.

These four films give all that one needs to know about the techniques of the laboratory diagnosis of diphtheria, of the typing of the diphtheria bacillus, and of the various virulence tests. The films will be of primary interest to bacteriologists, laboratory technicians, and medical students. They will also be of interest to physicians and nurses as a part of their general education. The physicians will profit by finding out the limitations of the laboratory diagnosis of diphtheria. Many pages of printed material and/or lectures could not possibly furnish the same amount of information as convincingly as this series. The photography and narration are excellent, and the films are very well organized.

Chick Embryo Techniques: 16 mm., black and white, sound, showing time 15 min. Demonstrated by G. John Buddingh, M.D., Louisiana State University School of Medicine. Produced in 1951 by and procurable on loan from Communicable Disease Center, 50 Seventh St., N.E., Atlanta 5, or on purchase from United World Films, 1445 Park Ave., New York 29.

The chick embryo is a very useful medium for culturing. It is highly specialized and has no rival in its specific field of usefulness. This film gives the complete technic of the procedure; all details are presented clearly. The physician and medical student will get a convincing demonstration in the shortest possible time. It can be recommended without reservations as meeting all the requirements of teaching a specialized procedure. It will be of interest to technicians, research investigators, and physicians in general and can be used advantageously in bacteriology courses. The photography and narration are excellent.

SOURCES OF MOTION PICTURES ON HEALTH

A revised list of "Sources of Motion Pictures on Health" has been prepared by the Committee on Medical Motion pictures. This new mimeographed list includes nine pages of addresses of the major loan and rental libraries, the state health departments' film libraries, and references to printed lists and catalogs. Copies are available from the Committee on Medical Motion Pictures, American Medical Association, 535 N. Dearborn St., Chicago 10.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

63:675-810 (June) 1951

*Progesterone Therapy in Dermatoses of Pregnancy (Herpes Gestationis). C. Keaty, P. E. Jones and J. H. Lamb.—p. 675.
*Antibiotics in Early Syphilis and in Syphilis Complicated by Pregnancy. H. M. Robinson and H. M. Robinson Jr.—p. 687.
Plasma Proteins in Various Diseases of Skin: Electrophoretic Studies. W. F. Lever, E. L. Schultz and N. A. Hurley.—p. 702.
Treatment of Chronic Cutaneous Problems with Calciferol. L. C. Goldberg and H. L. T. Dexter.—p. 729.
Lichen Simplex Chronicus (Vidal) Treated Successfully with Podophyllin. J. Garb.—p. 740.
Use of Mineral Oil in Maintenance of Cultures of Fungi Pathogenic for Humans. L. Ajello, V. Q. Grant and M. A. Gutzke.—p. 747.
Effect of Roentgen Rays on Microsporum Canis: An in Vitro Study. K. Loewenthal.—p. 750.
Vitamin A Deficiency with Cutaneous, Conjunctival ("Bitot" Spots) and Renal Manifestations: Report of Case. W. L. Marmelzat.—p. 759.
Necrobiosis Lipoidica Diabeticorum: Its Surgical Treatment. E. P. Cawley and R. O. Dingman.—p. 764.

Progesterone in Dermatoses of Pregnancy.—Ten women between 21 and 40 with polymorphic eruptions during pregnancy were studied. The onset of the dermatosis was during the first trimester of pregnancy in two patients, during late pregnancy in seven, and 24 hours post partum in one. There had been a total of 20 previous pregnancies among these patients, yielding 14 living children (a fetal mortality rate of 30%). One delivery was premature. Four of the 10 patients had experienced the dermatosis with previous pregnancies. During the pregnancy under consideration five of the 10 patients had moderate to severe edema and four had albuminuria. Persistent headache, red blood cells in the urine, and hypertension were observed in three patients. The level of blood chorionic gonadotropin in seven patients was abnormally elevated during late pregnancy, averaging 3,125 rat units per 100 ml. of blood as compared to the normal level of 500 to 750 rat units per 100 ml. Since the demonstration of excess chorionic gonadotropin in later stages of pregnancy has previously been shown to be associated with decreased production or aberrant metabolism of progesterone, substitutional treatment with progesterone (proluton®), in doses of 25 to 50 mg. daily was practiced. Remission of the skin lesions resulted in all 10 patients. All 10 pregnancies resulted in living, normal infants. There was one instance of premature delivery at eight months with fetal survival. The observation of elevated chorionic gonadotropin titers in late pregnancy and the response to treatment with progesterone are suggestive of progesterone deficiency in patients with dermatoses during pregnancy.

Antibiotics in Early Syphilis.—Of 166 patients with early syphilis 127 were treated with penicillin, 14 with chloramphenicol (chloromycetin®), 20 with aureomycin, and five with terramycin. Of the 127 patients treated with penicillin, 56 had dark field-positive lesions of early syphilis and 71 had early syphilis complicated by pregnancy. Ten different schedules of treatment with penicillin were used. Of 43 patients who were scheduled to be treated once weekly for 35 weeks with intramuscularly administered penicillin only eight completed the course. Of 13 outpatients treated with buffered penicillin tablets daily for 15 days, only two completed the required amount of treatment, and neither of these achieved a satisfactory result. Carinamide administered concurrently to 27 patients receiving penicillin orally or intramuscularly did not enhance the value of the penicillin. Of the 56 patients with uncomplicated early syphilis, 14 had negative results of blood and spinal fluid examination six months after completion of penicillin treatment. Of the 71 patients with early syphilis complicated by pregnancy who were treated with penicillin, 62 gave birth to normal infants and nine to infants with congenital syphilis. The mothers' syphilis was improved in 22 instances, and there was no change in 49. Of the 14 patients treated with chloramphenicol, the dark field observations became negative in eight within 24 hours and in the rest in 48 to 72 hours. Ten of these patients completed the preliminary six months follow-up period, and seven of them became seronegative and had negative results on spinal fluid examinations. Two pregnant women with early syphilis treated with chloramphenicol were delivered of nonsyphilitic infants. Of the 20 patients treated with aureomycin, 10 received the drug by mouth and 10 by intravenous route. With the oral treatment the dark field observations became negative in 18 to 72 hours. The lesions healed in seven to 12 days in all 10. Three of the patients completed the preliminary six months observation period and became seronegative and had negative spinal fluid reactions. Of the 10 patients treated intravenously, eight completed the preliminary six months follow-up period; three of these became seronegative and had negative results of spinal fluid examination, three showed a decided drop in the serologic titer, and two were lost sight of. The lesions in this group healed in seven to 14 days. Further studies must be done to determine an optimum dose. The five patients treated with terramycin had negative dark field observations 24 to 32 hours after the institution of treatment. The lesions healed in from seven to 12 days.

A.M.A. Arch. Surgery, Chicago

62:737-902 (June) 1951

Laboratory Aids in Surgery, with Special Reference to Potassium Deficiency. W. H. Cole.—p. 737.
Experimental Bronchotracheal Anastomosis. R. P. Meyer, R. W. Ehrlich, C. B. Taylor and others.—p. 753.
Arterial Homografts: III. Use of Preserved Grafts in Treatment of Neoplastic Disease Involving Peripheral Arteries. H. Swan and H. M. Morfit.—p. 767.
*Surgical Treatment of Pulmonary Stenosis with Intact Interventricular Septum. W. J. Potts and W. L. Riker.—p. 776.
Attempts at Experimental Production of Portal Hypertension. T. C. Douglass, W. H. Mehn, B. F. Lounsbury and others.—p. 785.
Portal Hypertension: Use of Venous Grafts When Side to Side Anastomosis Is Impossible. J. T. Reynolds and H. W. Southwick. —p. 789.
Effect of Portacaval Venous Shunt on Sulfobromophthalein (Bromsulphalein®) Retention. D. E. Preshaw, A. Large and A. F. Johnson. —p. 801.
Effect of Occlusion of Arterial Blood Supply to Normal Liver: Experimental Study. J. H. Grindlay, F. C. Mann and J. L. Bollman.—p. 806.
Open Versus Closed Method of Colon Anastomosis. C. F. Kittle, T. G. Orr Jr. and T. G. Orr.—p. 812.
Familial Polyposis of Colon. W. S. Dye, G. A. Olander, C. W. Monroe and J. H. Olwin.—p. 823.
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Prognosis of Gastric Carcinoma: Effect of Extent of Resection. W. D. Thomas, J. M. Waugh and M. B. Dockerty.—p. 847.
Congenital Intrinsic Obstruction of Stomach and Duodenum in Newborn. C. D. Benson and J. J. Coury.—p. 856.
Use of Tantalum Mesh in Hernia Repair. C. C. Guy and C. Y. Werelius. —p. 867.
Benign Duodenocolic Fistula. C. S. Rife.—p. 876.
Separations of Abdominal Wounds. C. W. Mayo and M. J. Lee Jr. —p. 883.
Effects of Soaps Containing Hexachlorophene on Wounds and Burned Surfaces. R. R. Best, J. D. Coe and G. B. McMurtrey.—p. 895.

Surgical Treatment of Pulmonary Stenosis.—Stenosis of the pulmonary valve is the only important abnormality in some patients with cyanosis due to congenital heart disease. This abnormality, sometimes called "pure pulmonary stenosis," differs from that seen in typical tetralogy of Fallot in that the interventricular septum is intact and consequently there can be no overriding of the aorta. Stenosis is caused by fusion of the cusps of the pulmonary valve. Dilatation of the pulmonary artery is usually found immediately distal to the stenosis. The only other

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An asterisk (*) before a title indicates that the article is abstracted.

lesion often seen in these hearts is a patent foramen ovale, which serves as an escape valve into the left auricle for blood dammed back in the right auricle. The size of this shunt determines the degree of cyanosis. There may be dyspnea and decrease of exercise tolerance with relatively little cyanosis. The heart is enlarged. There is usually a systolic murmur. Whereas in the tetralogy of Fallot satisfactory results are obtained by shunt operations between the subclavian and the pulmonary artery or the aorta and the pulmonary artery, the most satisfactory operation for the stenotic pulmonary valve is transventricular valvulotomy. The valvulotome used by the authors consists of a small cataract blade on a rounded shaft attached to an ordinary knife handle. The rounded shaft was made of such size that it would fill the opening in the wall of the right ventricle and thus prevent loss of blood. Although this valvulotome proved successful in four patients, it was feared that it might fail to relieve the obstruction in older patients with more rigid valvular stenosis. The principles of the expanding blade used by urologists and of the adjustable esophageal dilator used by endoscopists were drawn on in devising an expanding valvulotome and dilator. The valvulotome is so constructed that the blades can be retracted by means of a turn screw while the instrument is being thrust through the wall of the ventricle. An important feature is the gage that indicates exactly how widely the blades of the knife are being expanded while in the chamber of the right ventricle preparatory to the thrust through the stenotic valve. The shaft of the dilator is the same caliber as that of the valvulotome and is introduced through the same hole in the right ventricle after the valvulotome has been withdrawn. Because reduction of temperature lessens the consumption of oxygen during the operation and thereby reduces the danger of disastrous anoxia, the patient is placed on a water mattress through which ice water is circulated. The authors performed valvulotomy in 13 patients, one of whom died. In the other 12 patients, the results have been excellent in 11 and fair in one.

Surgical Treatment of Familial Polyposis.—Malignant degeneration may be expected in familial polyposis of the colon, if it is allowed to progress untreated. The symptoms and signs of this disease include bowel irregularity, diarrhea, the presence of mucus and blood in the stool, and abdominal cramps and tenesmus. Any of these should warrant a digital rectal examination and a proctosigmoidoscopic examination, at which the polyps may be seen under direct vision and tissue removed with the biopsy forceps from suspicious areas for microscopic section. Sometimes proctosigmoidoscopic examination will not reveal any suggestive lesion, and then the contrast enema must clinch the diagnosis and demonstrate the extent of the disease. Ascorbic acid and blood transfusions are helpful in preparing patients with polyposis of the colon for operation. Partial or total colectomy is the procedure of choice. An end-to-end anastomosis between the terminal portion of the ileum and the distal 3 cm. of the sigmoid over a rubber tube reduces the number of suture lines to a minimum, provides adequate decompression proximal to the suture line, thus removing intraluminary tension, and accelerates the rate of wound healing by its "splinting effect." The anastomosis should be carried out prior to the surgical removal of the colon. Although the major branches of the superior mesenteric artery must be ligated individually, the trunk of the inferior mesenteric artery can be ligated close to its aortic origin. The one-stage procedure permits surgical treatment at the optimum time, and the remaining rectal segment can be checked and other polyps destroyed by fulguration through a proctoscope. The author reports on two families with polyposis whom he has treated. In each case a parent and two siblings were involved.

American J. Digestive Diseases, Fort Wayne, Ind.

18:175-204 (June) 1951

Inadequacy of Routine Barium Enema for Roentgenologic Examination of Rectum. G. Levene and N. C. Veale.—p. 175.
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Carotinemia and Hepatic Dysfunction in Diabetes Mellitus. R. W. Hillman and L. Nerb.—p. 185.
Diabetic Case Finding—New Technique. N. W. Drey.—p. 189.
Flocculation Tests in Differential Diagnosis of Jaundice. H. Popper, F. Steigmann, Y. Tsumagari and J. de la Huerga.—p. 192.
Research Views on Gastro-Duodenal Ulceration. A. Bernard.—p. 197.

American J. Obstetrics and Gynecology, St. Louis

61:1193-1426 (June) 1951. **Partial Index**

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Vaginal Delivery Following Cesarean Section. H. E. Schmitz and C. J. Gajewski.—p. 1232.
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*Paravertebral Lumbar Sympathetic Block in Labor: Report on 500 Deliveries by Fractional Procedure Producing Continuous Conduction Anesthesia. A. M. Reich.—p. 1263.
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Correlation of Histologic Grade, Clinical Stage, and Radiation Response in Carcinoma of Uterine Cervix. R. W. Kistner and A. T. Hertig.—p. 1293.
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New Biochemical Test for Pregnancy: Study of 2,560 Tests on 1,640 Patients. G. C. Richardson.—p. 1317.
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Bacteriuria During Pregnancy. J. B. Bernstine and G. H. Warren.—p. 1329.
Bougie Induction of Labor. E. D. Knerr Jr.—p. 1335.
Acute Isolated Myocarditis in Pregnancy. C. L. Mendelson.—p. 1341.
Management of Transverse Lie. S. A. Montello.—p. 1360.
Treatment of Acute Puerperal Mastitis. H. C. Hesseltine and H. D. Priddle.—p. 1370.

Paravertebral Lumbar Sympathetic Block in Labor.—Continuous lumbar sympathetic conduction anesthesia is produced by fractional dosages of 1% procaine solution with reinjections as needed throughout labor. The solution is deposited bilaterally at the anterior surface of the first lumbar vertebral body. Only one needle is inserted on each side, and this is removed following the original injection, after a fine plastic catheter has been placed through its lumen. These tubes serve to carry the anesthetic solution to the area as often as necessary. A limited part of the autonomic nervous system, namely, a segment of the lumbar sympathetic chain and ganglions containing afferent and efferent fibers to the uterus, cervix, and vagina, is blocked. The anesthetic does not come in contact with the spinal somatic nerves, the spinal canal, or the epidural, subdural, or vertebral foramina areas. Contrary to other regional conduction methods (epidural or subarachnoid) used in obstetrics, in which pathways containing mixed nerve structures are bathed by the cocaine derivatives, this method limits its action to the sympathetics. The muscular contractions of the abdominal muscles in the second stage of labor are not impaired, but inasmuch as the innervation of the lower parturient canal, comprising the pelvic floor, perineal body, and structures about the introitus, is derived through the somatic nerves, namely, the pudendal and iliac-inguinal nerves, the sympathetic nerve block will not be effective in blocking painful stimuli from these areas during the final phases of labor. A bilateral pudendal nerve block, therefore, is used to produce regional anesthesia at these levels. However, it is given earlier than is ordinarily the case, namely, in a multipara at about four-finger cervical dilatation, in a nullipara after the onset of the second stage. The advantages other than the relief of pain are that the physiological changes occurring during labor in the lower uterine segment and the cervix are enhanced. The forces of labor are either increased or at least remain undiminished, and labor is shortened. The termination of labor by a spontaneous delivery or by elective perineal forceps may usually be expected. The newborn infant breathes deeply and cries immediately after delivery. He presents no evidence of anoxemia or massive aspiration of foreign material, unless some unrelated obstetrical problem has intervened. The mother is alert, cheerful, relaxed, and cooperative.

Continuous-Drip Subarachnoidal Block for Labor and Delivery.—Continuous-drip spinal anesthesia was administered to 52 parturient women after labor had begun. The skin and underlying structures at the level of the third lumbar interspace were

infiltrated with 1 ml. of procaine hydrochloride (novocain®)-ephedrine solution. A spinal tap was then made with a special 18-gage needle and the vinylite® catheter introduced 1 in. into the subarachnoid space. After removal of the spinal needle, a blunt 23-gage needle was inserted into the distal lumen of the vinylite® catheter and the hub of the needle was closed with a metal plug for the female Luer-lok adapter. The catheter was then directed transversely across the back of the patient to her side and secured in this position with adhesive tape. Immediately following a uterine contraction, with the patient in the sitting position, 2 ml. of 2.5% procaine solution was introduced slowly from a Luer-lok syringe. Forty-five to 60 sec. after this injection, the patient lay flat on her back, until the level of hypalgesia to pin prick extended to the tenth thoracic dermatome. The patient was then elevated to a semi-recumbent position by raising the back rest to 45 degrees. A continuous-drip subarachnoidal infusion of 0.5% procaine hydrochloride was begun at the rate of 3 to 4 drops per minute. About 15 to 20 min. after the start of the continuous subarachnoid drip, the bed rest was lowered to 15 to 20 degrees. Maternal blood pressure and fetal heart tones were checked every 15 min. The rate of the subarachnoidal drip was also checked periodically. The patient was instructed to "bear down" synchronously with the uterine contractions. Before the patient was moved to the delivery table, 50 mg. of meperidine (demerol®) hydrochloride was injected intramuscularly. The continuous drip was discontinued, and the hub of the needle in the distal end of the catheter was closed with the metal plug. Before delivery, it was occasionally necessary to administer another 2 ml. of 2.5% procaine solution. After delivery and repair, the patient was turned on her side, her back was arched, and the catheter was removed. A dressing was taped over the puncture site. By means of this technique, complete pain relief can be afforded early to parturient women without significant interference with the process of labor and delivery.

American Journal of Public Health, New York

41:635-768 (June) 1951. **Partial Index**

Current Experience in Multiphasic Health Examinations: Orientation and Background. L. A. Scheele.—p. 635.
Modern Methods in Sampling of Human Populations: General Principles in Selection of Sample. W. G. Cochran.—p. 647.
Direction of Research on Vaccination Against Influenza—New Studies with Immunologic Adjuvants. J. E. Salk, A. M. Laurent and M. L. Bailey.—p. 669.
Results Obtained with Glycerolated Vi Antigen in Detection of Chronic Typhoid Carriers. M. Saint-Martin and J. M. Desranleau.—p. 687.
New Patterns in Industrial Health and Medical Care Programs in California. E. R. Weinerman and H. K. Abrams.—p. 703.

American Review of Tuberculosis, New York

63:625-742 (June) 1951

*Tuberculous Cavities of Lower Lobe: Results of Treatment in 103 Patients. J. S. Chambers Jr.—p. 625.
Treatment of Minimal Pulmonary Tuberculosis Confined to Apex of One Lung. A. L. Paine.—p. 644.
Coccidioidin Sensitivity on Isthmus of Panama: Report of Tests Performed on 1,000 Patients. H. A. Tucker.—p. 657.
Slide Test Modification of Hemagglutination Test for Antibodies Against Tubercle Bacilli. W. Thalhimer and C. Rowe.—p. 667.
In Vitro Leukocyte Cytolysis Test in Patients with Sarcoidosis. G. D. Baldridge, A. M. Kligman and R. Jones Jr.—p. 672.
Nature of Tuberculin Reaction: Failure to Demonstrate in Vitro Cytotoxicity of Tuberculin for Cells of Sensitized Animals. G. D. Baldridge and A. M. Kligman.—p. 674.
Significance of Results of in Vitro Drug-Sensitivity Tests with Mycobacterium Tuberculosis. C. A. Colwell, G. Pitner and M. Moravec.—p. 679.
Mechanism of Liquefaction of Tubercles: I. Behavior of Endocellular Proteinases in Tubercles Developing in Lungs of Rabbits. C. Weiss and M. L. Boyar-Manstein.—p. 694.

Tuberculous Cavities of Lower Lobe.—Cavitary tuberculosis of the lower lobes has presented a problem in management since the inception of collapse therapy. With the newer means of treatment available, such as resection, pneumoperitoneum, and streptomycin, it was believed that a study of a group of patients with lower lobe cavitary tuberculosis largely treated by the older methods was essential to evaluation of the new methods. Lower lobe cavitation accounts for from 20 to 25% of tuberculous cavitation. A group of 103 patients with lower lobe cavitary tuberculosis was collected for study. Of these, 57 patients had tuberculosis limited to one lower lobe (group A) and 46 had more widespread disease with the lower lobe cavity presenting the principal therapeutic problem (group B). Collapse therapy was used in 97 of the patients; the great majority received pneumothorax or phrenic nerve interruption, alone or in combination. The results of therapy with regard to cavity closure and the patients' status observed at an average follow-up period of four and one-half years after discharge from the sanatorium did not differ appreciably with the three therapeutic methods. The results in the cases with more widespread tuberculosis were poorer than in the unilobar cases, particularly when they were treated with pneumothorax. The over-all results in the series of 103 patients were as follows: in 73 patients, the tuberculosis has become inactive; in 12, the disease has remained active; and in 18 patients, the tuberculosis has proved fatal. In the 57 patients with tuberculosis limited to the lower lobe, the disease has become inactive in 48 patients, remains active in four, and has proved fatal in five.

Anesthesiology, New York

12:261-400 (May) 1951. **Partial Index**

Action of Procaine on Heart. A. M. Wedd and H. A. Blair.—p. 261.
Prolonged Peripheral Nerve Block by Means of Indwelling Plastic Catheter. Treatment of Hiccup (Note on Electrical Localization of Peripheral Nerve). S. J. Sarnoff and L. C. Sarnoff.—p. 270.
Concentrations of Oxygen, Nitrous Oxide, Nitrogen and Ether and Their Correlation with Certain Physiologic Variables During Surgical Anesthesia in Man. R. W. Ridley, A. Faulconer Jr. and J. E. Osborn.—p. 276.
Psychologic Preparation as Method of Reducing Emotional Trauma of Anesthesia in Children. K. Jackson.—p. 293.
Hypobaric Spinal Anesthesia: Review of Literature and Some Clinical Observations. J. J. Snyder.—p. 301.
Blood Flow and Oxygen Consumption of Human Brain During Anesthesia Produced by Thiopental. R. L. Wechsler, R. D. Dripps and S. S. Kety.—p. 308.
Spinal Anesthetic Effects of Barbiturates: Preliminary Report. R. L. Morrison, T. Koppanyi and E. B. Tuohy.—p. 315.
Headache After Spinal Anesthesia: Experiments with New Spinal Needle. S. Haraldson.—p. 321.
Effects of Procaine Amide on Cardiac Irregularities During Cyclopropane Anesthesia. L. E. Morris and B. Haid.—p. 328.
Endobronchial Anesthesia for Intrathoracic Surgery. J. J. Bonica and W. M. Hall.—p. 344.
Spinal Anesthesia in Children: Report Based on 350 Patients Under 13 Years of Age. S. Berkowitz and B. A. Greene.—p. 376.

Annals of Allergy, Minneapolis

9:281-420 (May-June) 1951

Study of Hemagglutinin Produced in Response to Administration of P^{32} Tagged Erythrocytes. S. G. Cohen, E. L. Karlson and T. R. Kendrick.—p. 281.
*Experiences with ACTH and Cortisone in Treatment of Asthma and Eczema in Infancy and Childhood. J. Glaser, S. C. Siegel, J. D. Goldstein and R. S. Meltzer.—p. 292.
Theory for Allergy and Experimental Effects of Antihistamines on Common Cold. E. P. Fowler Jr.—p. 299.
Natural Steroid Complex in Treatment of Bronchial Asthma. S. H. Jaros and A. D. Spielman.—p. 308.
Combined Allergic and Psychosomatic Treatment of Bronchial Asthma. E. A. Brown.—p. 324.
Treatment of Certain Dermatoses as Bacterial Allergies. K. A. Baird.—p. 330.
Allergic and Nonallergic Causes of Eczematous Hand Eruptions: I. Incidence. M. H. Samitz and J. J. Albom.—p. 336.
New Method and Medium for Administering and Controlling Action of Therapeutic Agents, with Particular Reference to Epinephrine: I. Experimental Studies. R. A. Ouer.—p. 346.
*Observations on Action of Khellin in Attacks of Bronchial Asthma. V. J. Derbes, R. J. White, J. Teverbaugh and others.—p. 354.
Erythremia ("Polycythemia") During Massive, Oral, Streptomyces-Derived B_{12} Therapy: Report of Two Cases with Further Observations of "Anti-Allergic" Effects of Streptomyces Fermentation Antibiotics. R. D. Barnard, S. J. Kopet and A. E. Stahl.—p. 360.
On Incidence of Sensitiveness to Corn: Criticism of Diagnostic Procedure. H. S. Bernton.—p. 368.
Mechanism of Allergy of Eye and Adnexa. E. E. Poos.—p. 378.
Treatment of Hypersensitive Rhinitis and Other Allergic Diseases with Chlor-Trimeton.—p. 387.
Role of Bacterial Allergy in Rheumatoid State. H. Blatt.—p. 390.

Corticotrophin and Cortisone in Asthma and Eczema.—Corticotrophin (ACTH) and cortisone were used in the treatment of three children who had eczema and 10 who had bronchial asthma. Their ages ranged from 18 months to 15 years. Both

corticotrophin and cortisone proved to be potent agents in the temporary relief of chronic atopic dermatitis (eczema) and bronchial asthma. Infants and children react to these hormones essentially as do adults, except that they require larger doses in proportion to their body weight. The dosage depends on the severity of the disease more than on the age or weight of the child. The greater the improvement obtainable by specific management, the less will be the amount of hormone required. This is important not only because of the cost of these hormone preparations but also because of their possible deleterious effects over long periods. The longest remission in asthmatic children occurred in a boy of 9 who remained symptom-free for four months after corticotrophin therapy was stopped. The authors believe that without these drugs, 11 patients would have required long periods of hospitalization or would have been obliged to try the uncertain effects of a change of climate. However, these drugs are as potentially harmful as they are beneficial and in the present state of knowledge should be used only when absolutely necessary and with the closest supervision.

Khellin in Bronchial Asthma.—Khellin is obtained from a plant known in Arabic as "Khella" and in English as "Bishop's Weed." It belongs to the carrot family, which also includes parsley, parsnip, celery, anise, caraway, and dill. After reviewing the recent literature on the synthesis and pharmacology of khellin, the authors recapitulate two recent reports on the use of khellin in asthma and then describe their own observations on 45 asthmatic patients. Khellin was administered, in 100 mg. doses, to 20 patients by the intramuscular route and to 25 patients by the oral route. Good or excellent results were obtained in 12 and slight or no benefit in eight of those receiving intramuscular injections of the drug. Similarly, of the 25 patients who were given khellin by mouth, 14 had good or excellent results and 11 slight or no benefit. Pain at the site of reaction, headache, and nausea were observed in some patients. One advantage of khellin is its prolonged action. Also, it should be particularly useful in asthmatics with concomitant hypertension. From the results obtained in this series of 45 patients and in other patients now under observation, it is felt that khellin will have a useful place in the treatment of bronchial asthma.

Diseases of Chest, Chicago

19:615-762 (June) 1951

Apico-Axillary Thoracoplasty. E. Morelli and N. Di Paola.—p. 619.
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Etiopathogenesis of Suppurative Diseases of Lungs. P. Lukomski.—p. 653.
Bronchiectatic Bronchiolitis. A. O. Zorini and L. Pigorini.—p. 658.
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Chronic Constrictive Pericarditis (Medical Aspects). C. L. C. Van Nieuwenhuizen.—p. 677.
Chronic Constrictive Pericarditis (Surgical Aspects). M. C. A. Klinkenbergh.—p. 684.
Neurogenic Tumors of Posterior Mediastinum. C. Rodriguez, V. Brito and L. Potenza.—p. 690.
Pulmonary Manifestations of Schistosomiasis. Abdel-Aziz Sami.—p. 698.
World Incidence of Mortality from Chest Disease. G. L'Eltore.—p. 706.

Endocrinology, Springfield, Ill.

48:345-488 (April) 1951. **Partial Index**

Estrogen Stimulation of Oviduct in Vitamin-Deficient Chicks. I. T. Kline and R. I. Dorfman.—p. 345.
Comparison of Sensitivities of Immature and Pregnant Mouse for Estimation of Gonadotropin. A. J. Ladman and M. N. Runner.—p. 358.
Effect of Roentgen Ray Irradiation on Normal, Hypothyroid and Hyperthyroid Rats. T. J. Haley, S. Mann and A. H. Dowdy.—p. 365.
Synergism Between Pituitary Follicle Stimulating Hormone (FSH) and Human Chorionic Gonadotropin (HCG). M. E. Simpson, Choh Hao Li and H. M. Evans.—p. 370.
Elimination of Common Error in Determination of Total 17-Ketosteroid by *m*-Dinitrobenzene Reaction. C. H. Sloan and G. H. Lowrey.—p. 384.
Relation of Adrenal to Red Blood Cell Fragility. H. Megel and A. S. Gordon.—p. 391.
Potassium Deficiency as Cause of So-Called Rheumatic Heart Lesions of Adaptation Syndrome. E. Peschel, B. Black-Schaffer and C. Schlayer.—p. 399.
Synovial Fluid Clot Prevention Test for Determination of Hyaluronidase Activity. G. H. Warren and J. G. Durso.—p. 408.

Gastroenterology, Baltimore

18:1-164 (May) 1951

Needle Biopsy of Liver: VII. Observations in Fatty Vacuolization of Liver. H. Ulevitch, E. A. Gall, E. L. Abernathy and L. Schiff.—p. 1.
On Morphologic State of Gastric Mucosa in Duodenal-Ulcer Patient. E. D. Palmer.—p. 8.
Gastroscopic Observations on Effect of Banthine on Human Stomach. L. M. Asher.—p. 21.
*Use of Banthine in Treatment of Duodenal Ulcer: Preliminary Report on Its Use in 137 Patients. C. H. Brown and E. N. Collins.—p. 26.
17-Ketosteroid Excretion in Liver Disease. H. L. Eisenberg, M. M. Kirshen, D. H. Atlas and P. Gaberman.—p. 36.
Treatment of Chronic Relapsing Pancreatitis by Sympathectomy and Splanchnicectomy. H. L. Hyman and C. C. Burton.—p. 43.
Oral Cholecystography: Critical Review of 200 Operated Cases. H. P. Smith Jr. and T. M. Runge.—p. 49.
Report of Committee on Psychosomatic Relationships in Gastroenterology. S. Wolf.—p. 55.
Function Tests in Diagnosis of Biliary Tract Disease Using Sodium Dehydrocholate or Secretin. H. S. Lans, I. F. Stein Jr. and K. A. Meyer.—p. 64.
Effects of Lipotropic Factors on Phospholipide Turnover in Patients with Infectious Hepatitis. D. Cayer and W. E. Cornatzer.—p. 79.
Prognosis of Portal Cirrhosis: Analysis of 62 Cases. R. H. Moser, B. D. Rosenak, R. D. Pickett and C. R. McIntire.—p. 86.
*Aureomycin Therapy in Hepatic Insufficiency. R. S. Goldbloom and F. Steigmann.—p. 93.
Observations on Use of Stilbestrol in Treatment of Peptic Ulcer. K. N. Ojha and K. Venkatachalam.—p. 100.
Effect of Pancreatic Stimulants on Blood Disease. L. A. Sachar, J. G. Probstein and J. M. Whittico.—p. 104.
Some Observations on Lack of Mutual Effects Between Stomach and Jejunal Graft Implanted Therein. M. K. Barrett, H. Dyer and T. Lefco.—p. 114.
Critical Study of Shay Rat. R. J. Madden, H. H. Ramsburg and J. M. Hundley.—p. 119.
Adrenalectomy in Shay Rat. R. J. Madden and H. H. Ramsburg.—p. 128.

Banthine® in Duodenal Ulcer.—Banthine® (beta-diethylaminoethyl xanthene-9-carboxylate methobromide) was given to 137 patients for periods of two to 12 months. All but 20 of these patients had duodenal ulcer, and in most of them the ulcer had proved intractable, 21 having had massive hemorrhages, seven obstruction, and nine surgery for perforation. The dosage used was 100 mg. every six hours for the first two months, and then the dose was usually decreased to one tablet (50 mg.) with each meal and one or two at bedtime. Of the 117 patients, 97 obtained prompt relief, while seven had definite or partial relief. Two patients with cicatricial duodenal stenosis became worse while on the medication, so that the drug should probably not be used in patients with obstruction from scarring; it can be used in patients with obstruction due to spasm, edema, and inflammation after a preliminary Sippy type of treatment. Two patients had a recurrence of duodenal ulcer while receiving the medication. Banthine® proved effective in six of nine patients with the hyperacidity syndrome, in two with marginal ulcers, and in two with peptic ulcers in hiatus hernias but not in four patients with gastric ulcer. Thus, while the results in patients wth duodenal ulcer seem to justify further trials with banthine,® the drug is not indicated in gastric ulcer.

Aureomycin Therapy in Hepatic Insufficiency.—Aureomycin was given as an additional treatment to 14 patients who showed signs of hepatic failure with beginning coma, despite intensive therapy. Because they were unable to take oral medication, five patients received aureomycin intravenously every 12 hr., in doses of 500 mg. A solution of the drug, in 10 cc. of sterile distilled water added to 200 or 300 cc. of isotonic solution of sodium chloride or 5% glucose in distilled water, was given rapidly during a period not exceeding 20 min. The other patients were given two capsules of aureomycin (500 mg.) every six hours. The medication was continued in the acute cases until there was improvement and in the chronic cases for 30 to 60 days, even after improvement was shown. Eight patients—seven with chronic and one with acute hepatic disease—showed improvement, two patients with chronic disease remained the same, and four patients—one with acute and three with chronic disease—died. Two of the initially improved patients returned to the hospital 10 days and two and a half months later, respectively, and died despite another course of aureomycin treatment. The effect of aureomycin may be due to its detoxifying action on the intestinal flora when given orally and to the action on bacteria in

the portal circulation or liver when given intravenously. Results with aureomycin to date seem to indicate that it should be given a therapeutic trial in patients with hepatic insufficiency.

Hawaii Medical Journal, Honolulu

10:327-400 (May-June) 1951

Repair of Unilateral Cleft Lip. L. Q. Pang.—p. 343.
Vitamin Deficiencies and Disease. W. B. Patterson.—p. 347.
Sulfonamide Nephrosis and Its Treatment. S. Mizuire.—p. 350.
Intra-Abdominal Neurogenic Sarcoma. B. O. Wade.—p. 353
*Hodgkin's Disease Controlled by Chloromycetin: Report of Case. S. R. Brown.—p. 356.

Chloramphenicol in Hodgkin's Disease.—A woman in whom inflammatory adenitis developed after an infection that simulated virus influenza was treated with chloramphenicol intermittently for months until histological examination disclosed that the adenitis was Hodgkin's disease. Since the chloramphenicol had produced fairly satisfactory results and nitrogen mustards had proved unsatisfactory, this treatment was resumed. The patient is still being treated with chloramphenicol; her general health is excellent; and the blood picture is normal. The author feels that chloramphenicol had a definite effect on the adenitis of Hodgkin's disease and discusses the significance of this effect.

Journal of Clinical Investigation, Cincinnati

30:435-538 (May) 1951

Collapse Produced by Venous Congestion of Extremities or by Venesection Following Certain Hypotensive Agents. E. D. Freis, J. R. Stanton, F. A. Finnerty Jr. and others.—p. 435.
*Effects of Adrenocorticotropic Hormone and Cortisone in Patients with Tuberculosis. C. A. LeMaistre, R. Tompsett, C. Muschenheim and others.—p. 445.
Aging as Factor in Renal Hemodynamic Changes Induced by Standardized Pyrogen. R. K. McDonald, D. H. Solomon and N. W. Shock.—p. 457.
Urinary Excretion of Choline Metabolites Following Choline Administration in Normals and Patients with Hepatobiliary Diseases. J. de la Huerga and H. Popper.—p. 463.
*Nephrotic Syndrome in Children: Interpretation of Its Clinical, Biochemical, and Renal Hemodynamic Features as Variations of Single Type of Nephron Disease. J. Metcoff, W. M. Kelsey and C. A. Janeway.—p. 471.
Studies in Disorders of Muscle: VII. Clinical Manifestations and Inheritance of Type of Periodic Paralysis Without Hypopotassemia. F. H. Tyler, F. E. Stephens, F. D. Gunn and G. T. Perkoff.—p. 492.
Respiratory Regulation During Exercise in Unconditioned Subjects. J. B. Hickam, W. W. Pryor, E. B. Page and R. J. Atwell.—p. 503.
Effect of Nor-Epinephrine upon Pulmonary Arteriolar Resistance in Man. N. O. Fowler, R. N. Westcott, R. C. Scott and J. McGuire.—p. 517.
Blood Levels of Adenine Nucleotides. H. G. Albaum, T. Cayle and A. Shapiro.—p. 525.
Butanol-Extractable Iodine of Serum. E. B. Man, D. M. Kydd and J. P. Peters.—p. 531.

Corticotrophin and Cortisone in Tuberculosis.—The seven patients who were selected for treatment with corticotrophin and cortisone had far-advanced pulmonary tuberculosis. Four of them also had active laryngeal tuberculosis. The course of the illness was evaluated prior to hormone administration from clinical, roentgenographic, bacteriologic, and immunologic data. Whenever possible, a preliminary observation period of seven to 10 days was undertaken. Each patient then received 100 mg. of hormone intramuscularly in four equally divided doses at six-hour intervals for an initial 10 day period. Four of the patients received corticotrophin, and three received cortisone. Throughout the study all patients were kept in bed. They received diets of their own selection. The changes brought about by the administration of these hormones were defervescence, greater sense of well-being, increased strength, improvement in appetite, as well as decrease in the edema and in the amount of exudate in the laryngeal lesions. In all patients the improvement was temporary and could not be maintained by further administration of the hormones. The signs and symptoms reappeared and were equal to or even more severe than those present before hormone administration. Edema and inflammation in the laryngeal lesions also returned promptly. The swift return of the manifestations of acute illness contrasted sharply with the relatively slow return of cutaneous hypersensitivity to tuberculoprotein and rise in the titer of the tuberculin-hemagglutinating antibodies observed several weeks after cessation of hormone administration. It seems clear that reactivity of host tissues sufficient to cause severe symptoms of tuberculous illness may be present without the presence of a positive Mantoux test.

The Nephrotic Syndrome in Children.—Children with the "nephrotic syndrome" present certain consistent clinical features, but their separation into two groups, "nephrosis" and the "nephrotic stage of nephritis," has been arbitrary and frequently difficult. This study was undertaken to determine if measurements of renal function would assist in the early differentiation of benign nephrosis from progressive nephritis and if studies of renal function would help to elucidate the pathogenesis of the nephrotic syndrome. Estimations of glomerular filtration rates, renal plasma flow, and maximal tubular excretory capacity were made in 29 nephrotic children. These were a fairly typical sample of a total of 90 nephrotic children recently observed at the clinic at which these studies were made. It was found that conventional clinical criteria frequently proved unreliable early in the course of the nephrotic syndrome as indexes of the functional status of the kidney or as guides to the subsequent course of the patient. The triad of anemia, acidosis, and azotemia, when correlated with a diminished glomerular filtration rate, indicated incompetence of the nephron for biochemical regulation and probable morphologic damage with poor prognosis. Fluctuating changes in glomerular filtration rate, renal plasma flow, and maximal tubular excretory capacity during the nephrotic syndrome suggested that variations in these measurements are a function of the severity and duration, rather than type, of disease. The biochemical and renal functional patterns indicate that reversible metabolic and hemodynamic rather than irreversible anatomic nephron damage frequently occurs. With progressive disease of long duration, greatly impaired renal function suggested that irreversible parenchymal destruction gradually supersedes the earlier physiological changes, with culmination in renal failure. The primary etiological mechanism remains undetermined; however, the idiopathic nephrotic syndrome in children, whether called pure or lipoid nephrosis, mixed nephritis, or nephrotic stage of subacute or chronic glomerulonephritis, appears to be a form of nephritis in which functional alteration and eventual anatomic changes indicate that the glomerulus is a primary site of the disease process. Spontaneous or induced remissions may proceed to apparent recovery, if the unknown etiological mechanism is inhibited before extensive anatomic damage has supervened.

Journal of Insurance Medicine, Louisville, Ky.

6:1-64 (March-April-May) 1951. **Partial Index**

Diagnosis of Menopausal Syndrome. L. M. Hurxthal.—p. 3.
Obesity. S. C. Freed and W. S. Kroger.—p. 12.
*Cardiovascular Syphilis. G. Flaum and E. W. Thomas.—p. 27.
Diagnostic Problems in Malnutrition. S. O. Waife.—p. 36.
Diagnosis and Prognosis of Behavior Disorder Associated with Organic Brain Disease in Children. A. A. Silver.—p. 38.

Cardiovascular Syphilis.—The essential pathological change in syphilis of the cardiovascular system occurs in the aorta. Spirochetes invade the aorta early (during the secondary stage) and involve the vasa vasorum of the adventitia. This interference with blood supply affects the muscular layer. Round cell infiltration occurs, and eventually there is destruction of the muscle fibers with replacement fibrosis. The resulting loss of elasticity of the aortic wall causes subsequent changes, such as insufficiency of the aortic valve, stenosis of the ostia of the coronary arteries, and aortic aneurysm. While it has been stated that the average duration of cardiovascular syphilis from diagnosis to death is three years, this means little in the individual case; each patient must be evaluated individually. Factors influencing prognosis include (1) the presence or absence of symptoms of diminished cardiac reserve, (2) the size of the heart, (3) the age of the patient (presence or absence of arteriosclerosis), (4) the type of work performed, and (5) the amount of previous antisyphilitic therapy and when it was given in relation to the discovery of cardiovascular involvement. Patients with cardiovascular syphilis respond to the usual cardiac therapeutic measures better

than was previously thought. There has been much discussion concerning the dangers of antisyphilitic therapy in cardiovascular syphilis. The major fear is the Herxheimer reaction (therapeutic shock), in which edema of the aortic wall may occur secondary to the rapid killing of spirochetes. This edema may involve the coronary ostia, causing their occlusion, or may weaken a damaged aneurysmal wall, causing it to rupture. The authors believe that this hazard has been greatly exaggerated. They encountered no adverse reactions in 69 patients with aortic insufficiency and/or aneurysm who were treated with penicillin. They favor procaine penicillin in oil with 2% aluminum monostearate. It may be given in doses of 600,000 units daily, every other day, or three times weekly, for 10 doses.

Journal of International College of Surgeons, Chicago

15:669-808 (June) 1951. **Partial Index**

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Trephine in Acute Frontal Sinusitis. D. Myers and M. S. Ersner. —p. 686.
Postoperative Dehiscence in Incisions Closed with Stainless Steel Alloy Wire. H. D. Trimpi and H. E. Bacon.—p. 698.
*New Approach to Heart in Cardiac Arrest. D. J. Wexler and F. Bromberg.—p. 705.
Female Urinary Incontinence Due to Ectopic Ureter. E. V. Cannabrava.—p. 715.
New Method for Prevention of Anaphylactic Serum Reactions. G. Wolfsohn.—p. 721.
Recurrent Peptic Ulcer Following Surgical Intervention: Diagnostic and Therapeutic Problems. K. A. Meyer and I. F. Stein Jr.—p. 725.
"Milk of Calcium Gallbladder": Report of Case. R. G. Majer.—p. 732.
Aneurysm of Celiac Artery. E. A. Garland.—p. 737.
Incomplete Rotation of Cecum with Volvulus of Midgut. L. Salvati and C. G. Hanson.—p. 743.
Tantalum Mesh in Hernia Repair. A. R. Koontz.—p. 748.
Prognosis of Septic Thrombophlebitis of Cavernous Sinus. H. I. Lillie. —p. 754.
Tuberculosis of Urinary Tract: Present Nonsurgical Treatment. G. E. Slotkin.—p. 760.

New Approach to Heart in Cardiac Arrest.—In Wexler and Bromberg's method of reaching the heart in cases of cardiac arrest the left side of the chest is entered by blunt upward burrowing between the deep surface of the posterior rectus sheath and the anterior slip of the diaphragm in a region where the diaphragm is not attached to the costal arch. A longitudinal incision cuts the anterior slip of the diaphragm. By inserting the fingers and burrowing behind the posterior rectus sheath and in front of the diaphragmatic muscle tissue, one enters the left side of the thoracic cavity without obstruction. On entering the chest, the fingers divide the junction of the parietal and diaphragmatic pleura. If the distance from the xiphoid to the point of origin of the diaphragm on the costal arch is too small, the attachments of the diaphragm can be separated to any distance necessary to admit the hand for cardiac massage. The patient died in whom this method was used, but the authors feel that familiarity with it should eliminate delay by the average surgeon. Access to the heart is gained through a natural anatomic plane of cleavage, which eliminates the need to incise the diaphragm or the chest wall. Closure is accomplished without additional suturing.

Journal of Mount Sinai Hospital, New York

18:1-70 (May-June) 1951. **Partial Index**

The Neustadter Home: Modern Concepts of Convalescent Care. H. Zazeela.—p. 4.
Psychosomatic Aspects of Convalescence. S. S. Bernstein.—p. 17.
Nutritional Requirements in Convalescence. H. Pollack.—p. 24.
Care of Convalescent Cardiac Patient. H. L. Jaffe.—p. 28.
Convalescent Therapy Following Operations upon Stomach. P. Klingenstein.—p. 31.
Care of Colostomy. A. S. Lyons.—p. 39.
Postoperative Care in Pelvic Surgery. M. A. Goldberger and R. I. Walter.—p. 47.
Convalescent Care of Post-Operative Neurosurgical Patients. I. Cohen. —p. 55.
Convalescent Care in Genito-Urinary Surgery. G. D. Oppenheimer and L. Narins.—p. 57.
Mount Sinai Hospital Conferences on Congenital Heart Disease: I. Eisenmenger's Complex with Defective Interatrial Septum. S. Jarcho. —p. 59.

Journal of Neurophysiology, Springfield, Ill.

14:181-254 (May) 1951. **Partial Index**

Origin of Cerebellar Waves. J. M. Brookhart, G. Moruzzi and R. S. Snider.—p. 181.
Location of Receptors for Tonic Neck Reflexes. G. P. McCouch, I. D. Deering and T. H. Ling.—p. 191.
Delayed Response Performance of Monkeys with Frontal Removals After Excitant and Sedative Drugs. J. S. Blum, Kao Liang Chow and R. A. Blum.—p. 197.
Unit Activity in Bulbar Respiratory Centre. M. N. J. Dirken and S. Woldring.—p. 211.
—p. 62.

Journal of Nutrition, Philadelphia

44:1-190 (May) 1951. **Partial Index**

Study of Discrepancy in Thiamine Content of Meat as Measured by Thiochrome and Rat Growth Methods. O. B. Fardig, N. B. Guerrant and R. A. Dutcher.—p. 29.
Effect of Heat Treatment on Nutritive Value of Milk Proteins: I. Evaporated and Powdered Milks. B. B. Cook, A. F. Morgan, E. O. Weast and J. Parker.—p. 51.
Dietary Constituents Which May Influence Use of Food Cholesterol: I. Eggs: Biotin and Avidin. R. Okey, R. Pencharz, S. Lepkovsky and E. R. Vernon.—p. 83.
Nutritional Improvement of White Polished Rice by Addition of Lysine and Threonine. L. J. Pecora and J. M. Hundley.—p. 101.
Effect of Purified Diets upon Rumen Flora. L. S. Gall, W. E. Thomas, J. K. Loosli and C. N. Huhtanen.—p. 113.
Nitrogen Requirement of Normal Men on Diet of Protein Hydrolysate Enriched with Limiting Essential Amino Acids. W. S. Hoffman and G. C. McNeil.—p. 123.
Metabolism of Women During Reproductive Cycle: XVIII. Effect of Multi-Vitamin Supplements on Secretion of B Vitamins in Human Milk. J. P. Pratt, B. M. Hamil, E. Z. Moyer and others.—p. 141.

Journal of Pediatrics, St. Louis

38:667-794 (June) 1951

*Subdural Hematoma, Hygroma, and Hydroma in Infants. G. Kinley, H. D. Riley Jr. and C. S. Beck.—p. 667.
Abdominal Pain as Manifestation of Epilepsy (Abdominal Epilepsy) in Children. S. Livingston.—p. 687.
*Prenatal Multiple Immunization. P. Cohen, H. Schneck and E. Dubow. —p. 696.
Statistical Analysis of 242 Cases of Meningococcus Meningitis. B. Kaufman, H. Levy, B. D. Zaleznak and A. M. Litvak.—p. 705.
Hemolytic Disease of the Newborn in Dizygotic Twins: Interesting Family History. J. J. Kelly and J. G. Shaffer.—p. 717.
Salmonella Infections of the Newborn Infant. H. C. Epstein, A. Hochwald and R. Ashe.—p. 723.

Subdural Hematoma, Hygroma, and Hydroma in Infants.—This paper deals with 22 children less than one year old who had symptoms of subdural hematoma. In all but one of the children the symptoms began during the first four months of life, and in 10 of these during the first week. In 16 the history showed prematurity, prolonged labor, abnormal presentation, difficult forceps delivery, or cesarean section. Other types of trauma were known in three instances. Two patients had infections that may have been causally related to the onset of the hematomas. The commonest symptom was some type of gastrointestinal upset. The diagnosis of subdural hematoma was made by subdural and spinal punctures in 12 of the 22 cases. All showed bloody and/or xanthochromic subdural fluid in the presence of spinal fluid with a normal protein content. The demonstration of a dilated subdural space by oxygen injection led to the diagnosis in six patients, one of whom had clear subdural and spinal fluids. All of the remaining patients had bloody and/or xanthochromic subdural fluid with clear spinal fluid. The diagnostic subdural puncture relieves the acute pressure on the brain, and thus it must be the aim of the surgical treatment to prevent the late effects of chronic pressure by either a constricting membrane or a persistent collection of subdural fluid. Thirty operations were performed in 17 patients; 25 osteoplastic flaps were made, and five trephinations were performed. The terms used to describe the conditions found at operation were chronic subdural hematoma, to indicate bloody and/or xanthochromic fluid encapsulated by a well-defined neomembrane; hygroma, to indicate a collection of xanthochromic fluid free in the subdural space with a nonencapsulating neomembrane; hydroma, to indicate a collection of colorless or slightly xanthochromic fluid free in the subdural space with no evidence of a neomembrane. The merit of these

distinctions is that they carry with them specific implications for treatment. The authors concluded that they all may represent stages in healing of subdural or intradural hemorrhage and that birth trauma is the commonest precipitating factor.

Prenatal Multiple Immunization.—A group of women attending a prenatal clinic were given a Schick test on admission. Immunization procedures were carried out on these women in the last trimester of pregnancy. Schick-positive mothers were immunized against both diphtheria and whooping cough, Schick-negative mothers against whooping cough alone. Certain patients of both groups were inoculated with a single injection of influenza virus vaccine. The injections were so spaced that immunization was completed approximately six weeks before delivery. The immunizing series for pertussis and diphtheria consisted of three injections given at intervals of four weeks. For influenza immunization, one injection was given six weeks before the expected date of delivery. Blood for titration of antibodies was taken from the mother before the immunizing series was begun and again at delivery. Cord blood, representing the fetal circulation, was also taken at delivery. It was found that 80% or more of the women responded with high titers of antibodies. These protective titers were quantitatively passively transferred to the newborn babies, in whom they persisted for three months or more. There were no adverse effects on either mothers or babies from inoculations given in the last trimester of pregnancy. The method of prenatal multiple immunization would seem to protect the newborn baby against diphtheria and pertussis, and if need be, influenza and tetanus during the first three months of life when effective active immunity cannot be established. Active immunization should follow at 3 to 4 months of age, when passive immunity has been lost and when mechanisms for establishment of active immunity function more efficiently than at an earlier age.

Kentucky Medical Journal, Bowling Green

49:189-236 (May) 1951

Diagnosis of Surgical Jaundice. M. L. Dean.—p. 189.
Hypersplenism. E. Rankin.—p. 192.
Rationale of Modern Diagnostic Approach to Mediastinal Tumors. O. A. Abbott.—p. 197.
Histoplasmosis, with Brief Reference to Two Cases from Kentucky, One in a Dog. J. T. McClellan.—p. 210.
Urinary Tract Calculi. G. A. Sehlinger.—p. 213.

49:237-278 (June) 1951

Headache: Trigeminal Neuralgia. H. L. Reed.—p. 237.
Pathology and Physiology of Headache. A. T. Hurst.—p. 238.
Headache Diagnosis. B. H. Hollis.—p. 240.
Medical Treatment of Headache. C. Morse.—p. 244.
Post Menopausal Bleeding from Benign Lesions of Genital Organs. A. B. Barrett.—p. 247.
Trends and Opportunities in Industrial Medicine. E. C. Holmblad.—p. 251.
X-Ray Examination of Spine. A. O. Miller.—p. 254.

Medical Annals of District of Columbia, Washington

20:297-354 (June) 1951

*Veratrum Viride and Hexamethonium in Treatment of Severe Diastolic Hypertension. E. D. Freis.—p. 297.
Medical Management of Pulmonary Embolism. J. M. Evans.—p. 305.
Pulmonary Complications Following Abdominal Surgery. E. J. McDonald. —p. 310.
Coronary Artery Disease. E. C. Andrus, C. B. Ethridge, W. L. Howell and others.—p. 313.

Veratrum Viride and Hexamethonium in Hypertension.—In most of the patients with hypertension discussed here the diastolic pressure was persistently above 120 mm. of mercury, even during bed rest. The patients who did not respond to conservative treatment, such as rest, reassurance, and sedation, were given purified extract of veratrum viride in tablet form or a low sodium diet or both. In rare cases veratrum alone kept the patient's blood pressure in the benign range; in a greater percentage diet plus veratrum was required; and in still others sympathectomy and diet plus various types of drug treatment had to be used together. Veratrum derivatives are difficult to regulate over long periods, for the following reasons. 1. Varying dosage requirements in different patients necessitate individual adjustment. 2. During therapy with veratrum there is considerable fluctuation in blood pressure from day to day, although the average may be lower. In some of the most severe cases it was necessary for a member of the family to check the blood pressure before each dose of the drug. 3. The margin between the dose that lowers blood pressure and that which produces side-effects is narrow. During the past six months the effects of the new ganglionic blocking agent, hexamethonium, or C6, have been investigated in patients with hypertension at the author's clinic. This agent produced sustained reductions of arterial pressure in almost all hypertensive patients. A remission of the malignant phase of hypertension occurred in 11 of 15 patients. The four who did not respond had advanced renal failure with uremia. Tolerance developed rapidly when the doses were repeated at intervals of four or six hours, but, when separated by 12-hour intervals, the development of tolerance was largely prevented. If under these circumstances the drug becomes ineffective, the hypotensive action can be restored by increasing the dosage. The average initial dose was 10 mg., but after several weeks of continuous therapy the average effective dose was 35 mg. The commonest side-effects of hexamethonium were dry mouth and constipation; the most serious reactions were paralytic ileus and inability to urinate. All of these side-effects can be overcome by the concurrent administration of the urethane of bethanecol chloride (urecholine®) in doses of 10 mg. under the tongue three times a day.

Minnesota Medicine, St. Paul

34:517-620 (June) 1951

*Combinations of Antibiotics in Treatment of Infectious Diseases. W. E. Wellman.—p. 537.
*Effect of Cortisone in Glomerulonephritis and Nephropathy of Disseminated Lupus Erythematosus. W. E. Jacobson, B. I. Heller and J. P. Hammarsten.—p. 541.
Present Status of BCG Vaccination. E. Fenger.—p. 543.
Infant Mortality in Minnesota, 1950. A. B. Rosenfield and E. W. Storey. —p. 546.
Emergency Blood Transfusion. T. H. Seldon.—p. 551.
Coin Lesions of Lung. D. L. Fink.—p. 554.
Management of Vasomotor Rhinitis. J. B. McBean.—p. 556.
Bronchoscopy and Common Chest Diseases. P. G. Boman.—p. 559.

Combinations of Antibiotics.—This report concerns the synergistic and antagonistic effects of combinations of penicillin, dihydrostreptomycin, aureomycin, chloramphenicol, and terramycin. Laboratory reports supporting the clinical use of combinations of the various antibiotics are confusing and in some cases contradictory. Furthermore, in many instances the clinical significance of the laboratory data is yet to be established. However, a few facts of significance seem clear. First, a synergism between penicillin and dihydrostreptomycin has been established. Second, there appears to be an antagonistic effect between penicillin and aureomycin or chloramphenicol. Third, certain bacteria made resistant to aureomycin, to terramycin, and to chloramphenicol do not show an increased resistance to dihydrostreptomycin. Bacteria made resistant to dihydrostreptomycin do not show an increased resistance to the other three antibiotics. These findings indicate that combinations of aureomycin and dihydrostreptomycin are effective in the treatment of brucellosis, and that combination of aureomycin or terramycin with dihydrostreptomycin would be effective in the treatment of peritonitis, meningitis, and bacteremia, when the organism causing these infections is unknown. The recommended treatment in subacute bacterial endocarditis due to enterococci consists of a combination of penicillin and dihydrostreptomycin. This combination is also advisable when the etiological agent is unknown.

Cortisone in Glomerulonephritis.—Four patients in the various phases of glomerulonephritis and two patients with the nephropathy of disseminated lupus erythematosus were studied during cortisone administration. The drug was given in doses of 100, 150, or 200 mg. daily for periods up to 30 days. Transient improvement in renal function, as measured by the renal plasma flow and glomerular filtration rate, occurred during the administration of cortisone, but hematuria and albuminuria did not decrease, and, in some instances, increased. Cortisone had no demonstrable beneficial effect on the basic pathological process in the glomerular capillaries. In both patients with lupus erythematosus, severe hypertension was produced.

Nebraska State Medical Journal, Lincoln

36:189-220 (June) 1951

Management of Advanced Carcinoma of Pelvic Origin. E. C. Sage. —p. 196.
Functional and Organic Disorders of Colon: From Viewpoint of the Internist. E. E. Simmons.—p. 198.
Treatment of Leukemia. E. B. Reed.—p. 203.
Newer Drugs in Treatment of Epilepsy. J. W. Kelley.—p. 209.
Use of Iodine in Toxic Goitre. G. H. Pester.—p. 211.

New England Journal of Medicine, Boston

244:777-820 (May 24) 1951

Role of Basic Sciences in Medical Research. C. Harington.—p. 777.
Benign Paroxysmal Peritonitis: Surgical and Histologic Findings. I. B. Brick and M. Cajigas.—p. 786.
Treatment of Esophageal Diverticulum by Inversion. D. E. Coburn. —p. 791.
*Intravenously Administered ACTH: Preliminary Report. A. E. Renold, P. H. Forsham, J. Maisterrena and G. W. Thorn.—p. 796.
Medicine as a Science: Surgery. E. D. Churchill.—p. 799.

Intravenously Administered ACTH.—Renold and associates report on about 100 subjects who received corticotrophin (ACTH) intravenously. The substance was dissolved in 500 ml. of saline solution or a 5% solution of dextrose in water and was infused intravenously over a period of eight hours. When 20 mg. of corticotrophin is given in this manner maximum adrenal cortical stimulation results in the average person. In addition to representing a substantial saving in material and cost of therapy, the intravenous route activates the adrenal gland in patients unresponsive to intramuscularly administered corticotrophin and is capable of reactivating the adrenal cortex suppressed by cortisone therapy. No anaphylactic reactions have been noted; however, until a much larger group has been studied, patients should be watched for the first 30 min. of the infusion. The longest follow-up period is five months at the time of writing, and as many as 32 infusions have been given to the same patient over a period of 16 weeks without evidence of sensitivity reactions. Of 12 representative cases, six who had rheumatoid arthritis were given corticotrophin intravenously for 12 to 19 consecutive days, and satisfactory remissions were obtained. Whether the permanent results differ from those obtained with large doses of intramuscularly administered corticotrophin remains to be seen. Exfoliative psoriasis resistant to intramuscular corticotrophin, acute exfoliative dermatitis following the use of penicillin ointment, acute gout, generalized Boeck's sarcoid, ulcerative colitis combined with rheumatoid arthritis, and nephrotic edema are other conditions that responded to the intravenous administration of corticotrophin. The authors conclude that the clinical results obtained with intravenously administered corticotrophin (20 mg. daily) compare favorably with those obtained with doses of five to 10 times this amount given intramuscularly.

244:821-858 (May 31) 1951

Annual Oration: How Specialized is a Specialty? D. Munro.—p. 821.
*Treatment of Eosinophilic Pneumonopathy: Report of Case Treated with ACTH. R. W. Vines and D. Clark.—p. 826.
*Complications of Diuretic Phase of Lower-Nephron Nephrosis: Report of Case Manifesting Tetany. I. S. Ravin, P. R. Aronson and J. H. Yules. —p. 830.
Twenty-Year Hospital Survey of Diabetic Deaths. N. Blumberg and L. Zisserman.—p. 833.
Medicine as Social Instrument: Journalism. J. Garland.—p. 838.

Treatment of Eosinophilic Pneumopathy.—Vines and Clark present the case of a woman, 41, who had been relatively healthy, except for being subject to hay fever since the age of 15. Her present disorder, which had begun as a cough and cold, was tentatively diagnosed as bronchopneumonia and then as virus pneumonia. Treatment with penicillin, aureomycin, and then with streptomycin and penicillin failed to produce the desired therapeutic effect. Examination of the blood revealed significant eosinophilia and repeated chest x-ray films disclosed increasing pulmonary infiltration. Low grade fever and a rapid pulse rate continued, but repeated sputum studies were negative for acid-fast bacilli. The sputum was loaded with eosinophils. When resumption of treatment with antibiotics proved ineffective, diagnoses of a Loeffler type of syndrome or of periarteritis nodosa were entertained. Respiration became more labored, and the patient had to be placed into an oxygen tent. Before treatment with corticotrophin (in 25 mg. doses every six hours) was started, the eosinophil count was 9,100 per cubic millimeter. Within 24 hours there was much improvement, and the temperature dropped to normal. The blood sedimentation rate began to decline. After two days of therapy the absolute eosinophil count was 25 per cubic millimeter. The chest roentgenograms also revealed a remarkable response. The corticotrophin appeared to be life-saving for this patient. She has now been active for over a year, although mild allergic symptoms and low-grade eosinophilia persist. This woman was more acutely ill than the average patient with a Loeffler syndrome, also known as eosinophilic pneumopathy or the E-P syndrome.

Tetany During Diuretic Phase of Lower Nephron Nephrosis.—The case presented illustrates problems associated with the diuretic phase of lower-nephron nephrosis. The case is noteworthy because it is the first in which tetanus developed during the diuretic phase. The appearance of tetany after an intravenous infusion that contained enough potassium to raise the serum potassium level from 3.1 to 5.2 mEq. per liter suggests that an alteration in the calcium-potassium ratio may have played a part. Either ionized calcium depression or potassium elevation may cause increased neuromuscular activity. The tetany probably developed in the following manner: Hypocalcemia and hyperphosphatemia occurred during renal shutdown because of failure of the kidney to excrete phosphorus (and phosphorus rise from tissue breakdown), with greater loss of calcium into the gut and urine; chronic acidosis led to the ionization of a great part of the available serum calcium; pulmonary edema with hyperventilation resulted in a shift in serum pH toward the alkaline side, with decreased concentration of ionized calcium; and potassium administration altered the calcium-potassium ratio, producing increased neuromuscular activity. The authors stress that the complications of the diuretic phase of lower nephron nephrosis may be as dangerous as the preceding period of anuria. Uremia may persist far into the recovery phase. Massive diuresis may result in water and electrolyte depletion. Attempts to prevent dehydration by intravenous replacement of the total volume of fluid lost may result in pulmonary edema. When diuresis reaches the extent of 4 L. in 24 hours, it may be dangerous to administer 5 L. of fluids. In the presence of low serum calcium and potassium, administration of potassium may result in tetany, unless calcium is administered simultaneously.

New Jersey Medical Society Journal, Trenton

48:253-300 (June) 1951

Cancer Program in New Jersey, Part II A: Papanicolaou Smears in Diagnosis of Malignancy. W. G. Bernhard and M. Rush.—p. 255.
Homologous Serum Jaundice Following Use of Irradiated Plasma: Report of Case. I. E. Blecher.—p. 258.
Digilanid in Maintenance of Digitalization: Its Effectiveness as Compared with Whole Leaf Digitalis. A. E. Parsonnet, A. Bernstein, E. Klosk and others.—p. 260.
Cortisone Dosage in Sydenham's Chorea. M. Cutler.—p. 266.
Some Interesting Facts in Life of Famous Surgeon. H. B. Orton. —p. 267.
Successful Treatment of Nephrosis with Cortisone. W. B. Nevius and A. S. Harden Jr.—p. 272.
Technics of Obstetrical Anesthesia. P. I. Bookstaver.—p. 277.
Nitrous Oxide as an Inhalation Anesthetic. M. N. Fenster.—p. 281.
Pleural Scarring in Ventricular Tachycardia. P. B. Jennings.—p. 282.

New Orleans Medical and Surgical Journal

103:499-556 (June) 1951

Medical Aspects of Atomic Warfare. R. L. Bohannon.—p. 505.
Significance of Hoarseness. H. B. Orton.—p. 511.
Congenital Atresia of Duodenum. W. H. Kisner and J. D. Coffey. —p. 515.
Treatment of Postsurgical Hypoparathyroidism. S. Brocato.—p. 520.
Asthma in Children. A. L. Cotton.—p. 524.
Carcinoma of Male Urethra. G. T. Mellinger.—p 529

Oklahoma State Medical Assn. J., Oklahoma City

44:217-252 (June) 1951

Cutaneous Manifestations of Certain Systemic Diseases. R. R. Kierland. —p. 217.
Gastro-Intestinal Function and Emotion. K. E. Appel and E. T. Auer. —p. 225.
*Methemoglobinemia in Infants Due to Ingestion of Nitrates in Well Water. H. G. Nelson and H. R. Sanders.—p. 232.
Premature Infant Mortality. N. J. Robinson and C. H. Hall.—p. 235.

Methemoglobinemia in Infants and Nitrates in Well Water.—Two cases of methemoglobinemia in infants are presented in which well water with a high nitrate content had been used for the preparation of the formula. The first case is of interest in that the baby had been given the formula in which well water was used as the diluent for only three days before development of the cyanosis. The relatively rapid development of the cyanosis was apparently due to the high concentration (728 ppm) of nitrate in the water. The high bacterial content and the shallowness of the well may have been additional factors. When a physician observes cyanosis in an infant, especially in one under 6 months of age, who is fed with well water and who has no other physical abnormality, he should consider the diagnosis of methemoglobinemia due to the ingestion of well water with a high nitrate content. Extensive laboratory studies are not necessary. A spectroscopic determination of methemoglobin will provide a definite diagnosis. Well water that is to be used in the preparation of a formula for an infant should be tested for the presence of nitrates.

Psychoanalytic Quarterly, Albany, N. Y.

20:165-348 (April) 1951

Simulated Pregnancy in a Male. W. N. Evans.—p. 165.
Anxiety, Trauma, and Shock. M. M. Stern.—p. 179.
Illusions, Naïve or Controlled. O. E. Sperling.—p. 204.
Psychoanalysis and Brief Psychotherapy. L. Stone.—p. 215.
Character of Jean Jacques Rousseau. C. Kligerman.—p. 237.
Some Psychodynamic Reflections upon Life and Writings of Solon. B. Engle and T. M. French.—p. 253.
Autonomic Resistances in Word Association Tests. S. J. Baker.—p. 275.
Inability to Remember Dreams and Jokes. M. Grotjahn.—p. 284.
Telephone as Technical Aid. L. J. Saul.—p. 287.

Radiology, Syracuse, N. Y.

56:639-798 (May) 1951

Mobilization of Health Resources for Defense. W. H. Aufranc.—p. 641.
Injury from Atomic Bombs. E. DeCoursey.—p. 645.
Preliminary Suggestions for Additional Teaching in Radiological Aspects of Atomic Defense. R. A. Harvey.—p. 653.
Detection of Radiation Hazards: Instruments and Personnel. W. F. Bale.—p. 656.
*Diagnosis, Prognosis, and Treatment of Radiation Injuries Produced by Atomic Bombs. E. P. Cronkite.—p. 661.
Radioactive Decontamination. C. R. Schwob.—p. 670.
Evaluation of Radiologic Hazards and Therapy of Radiation Illness. C. F. Behrens.—p. 675.
Excretory Urography: Clinical Trial of New Contrast Medium (Sodium-3-Acetylamino-2, 4, 6-Triiodobenzoate). L. L. Robbins, F. H. Colby, J. L. Sosman and W. R. Eyler.—p. 684.
Pulmonary Artery Thrombosis: Roentgen Manifestations. J. Hanelin and W. R. Eyler.—p. 689.
Cardiac Mensuration as Applied to Survey Films (4 × 5-Inch Photoroentgenograms). L. G. Jacobs and H. Nussbaum.—p. 704.
Solitary Pulmonary Necrosis: Comparison of Neoplastic and Inflammatory Conditions. R. Wigh and F. R. Gilmore.—p. 708.
Radium Therapy of Carcinoma of Cervix Uteri: Method of Dosimetry Affording Complete Description of Physical Factors. E. S. Kerekers and I. Meschan.—p. 719.
Calcification in Adrenal Neoplasms: Report of Case. C. L. Boice and W. N. Sears.—p. 731.
Pantopaque Pulmonary Embolism During Myelography. H. L. Steinbach and W. B. Hill.—p. 735.

Radiation Injury from Atomic Bombs.—It is widely believed that panic caused by an overwhelming fear will be the greatest hazard in the event of an atomic explosion. Education and indoctrination of the public should allay this greatest of hazards in atomic warfare. Radiation injury resulting from atomic weapons is of two types: (1) the superficial ionizing radiation burn from soft radiation (beta); (2) total body radiation injury, "the syndrome of acute radiation injury," from penetrating whole-body radiation (gamma and neutrons). The exposed population may number in the hundreds of thousands, and a classification based on likelihood of survival may be desirable. Distance from the explosion, radiation dosimeters, and symptomatology may aid in the segregation into groups to facilitate prognosis and treatment. With regard to prognosis the following points are stressed: 1. If vomiting occurs on the day of the bombing and is followed by diarrhea, prostration, continued vomiting, anorexia, and fever, survival is improbable, and death will occur in a matter of days. 2. If vomiting occurs on the day of the bombing and is followed by an asymptomatic period of one to three weeks before appearance of the typical symptoms of radiation injury (purpura, epilation, ulcerations of the mucous membranes, and gastrointestinal disturbances), survival is possible. 3. If there is no vomiting on the day of the bombing, survival is probable, unless there are complicating factors such as burns, thermal injuries, traumatic injuries, or concomitant epidemics. Epidemics in a leukopenic population may be catastrophic. The treatment of the pancytopenia temporarily induced by potentially lethal amounts of radiation is essentially no different from idiopathic pancytopenia or that temporarily induced by drugs or infection. There is no new drug, hormone, or vitamin that when administered after irradiation will increase the survival rate; however, it may be possible to increase the survival rate by accelerating recovery of hematopoiesis.

Review of Gastroenterology, New York

18:305-392 (May) 1951

*Increased Incidence of Coronary Thrombosis in Chronic Peptic Ulcer. L. M. Morrison.—p. 313.
Evolution of Surgical Supervision in Management of Advanced Idiopathic Ulcerative Colitis. H. D. Trimpi and H. E. Bacon.—p. 325.
Diagnosis of Colonic Stasis. H. Barowsky.—p. 337.
Gastroscopic Biopsy: Correlation of Clinical Findings and Tissue Biopsies of Stomach. P. L. Shallenberger, C. H. DeWan, C. B. Weed and J. C. Reganis.—p. 348.
Clinical X-Ray Conference on Localized Constricting Lesions of Colon. L. A. Ferguson, B. R. Van Zwalenburg and E. F. Ducey.—p. 366.

Coronary Thrombosis in Chronic Peptic Ulcer.—The autopsy records of a large series of consecutive chronic ulcer patients and of patients with other disorders were investigated for coronary thrombosis and myocardial infarction. Of 116 patients who died of chronic peptic ulcer, 27 (23%) had evidence of coronary thrombosis. The comparative figure for patients dying from acute diseases was 8%, from thyrotoxicosis 4%, from malignant neoplasms 6%, from "alcoholic" cirrhosis of the liver 5%, and from diabetes mellitus 24%. The incidence of coronary atherosclerosis and of coronary thrombosis with myocardial infarction is high, almost the same as in diabetes mellitus. Although the exact mechanism of the development of atherosclerosis in patients with peptic ulcer cannot be definitely defined, the author suggests that chronic or continual stimulation of the gastric vagus nerve alone may mediate these changes in the coronary arteries. Prolonged, excessive ingestion of large quantities of milk, cream, butter, and eggs, such as required in the Sippy diet, may also cause coronary atherosclerosis leading to ultimate coronary thrombosis with myocardial infarction. These two etiologic agents in chronic peptic ulcer may act synergistically in the production of coronary atherosclerosis.

Rhode Island Medical Journal, Providence

34:239-292 (May) 1951

Nutritional Observations in New England. F. W. Morse Jr.—p. 249.
Tetanus at the Rhode Island Hospital, 1930-1950. R. D. Mulroy.—p. 254.
Sarcomatous Transformation of Paget's Disease of Skull: Case Report. E. M. Knights Jr.—p. 258.

Rocky Mountain Medical Journal, Denver

48:321-390 (May) 1951

Purulent Meningitis. R. J. Blattner.—p. 339.
Well Child Supervision. J. A. Lichty.—p. 344.
Putting Art Back into Medicine. C. P. Bunch.—p. 349.

48:391-480 (June) 1951

Better Public Relations Through Better Medical Service. L. S. Evans. —p. 413.
So-Called "Progress" in Infant Feeding. M. G. Peterman.—p. 416.
Benign Lesions of Breast. N. A. Womack.—p. 418.
Surgical Repair of Inguinal Hernia in Infants and Children. H. C. Fisher.—p. 424.

Southwestern Medicine, El Paso, Texas

32:145-180 (May) 1951

Hormonal Treatment of Rheumatoid Arthritis. C. T. Stone Jr.—p. 162.
Fever, Outstanding Feature in Palindromic Rheumatism. C. W. Broders and A. E. Moon Sr.—p. 165.
Some Practical Suggestions for Management of Postpartum Hemorrhage. W. E. Lockhart.—p. 168.

32:181-216 (June) 1951

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Transabdominal Vagotomy, a Point in Technic Facilitating the Procedure. B. L. Burditt.—p. 202.
Measuring the Cardiac Handicap. R. J. Brotchner.—p. 203.

Surgery, Gynecology and Obstetrics, Chicago

92:641-766 (June) 1951

Experimental Evaluation of Intestinal Antiseptics When Used for Protection from Fecal Contamination During Colon Resection. J. M. Edmiston, O. G. Davies, T. W. Ledwich and others.—p. 641.
*Endometriosis in Rhesus Monkey. H. Klüver and G. W. Bartelmez.—p. 650.
*Evaluation of Aureomycin Therapy in Peritonitis: Report of 235 Consecutive Cases. L. T. Wright, H. Schreiber, W. I. Metzger and J. W. Parker.—p. 661.
Electrophrenic Respiration: IX. Comparison of Effects of Positive Pressure Breathing and Electrophrenic Respiration on Circulation During Hemorrhagic Shock and Barbiturate Poisoning. J. V. Maloney Jr., J. E. Affeldt, S. J. Sarnoff and J. L. Whittenberger.—p. 672.
Clinical and Experimental Studies in Use of Water-Soluble Agent for Bronchography. M. E. Peck, A. J. Neerken and E. Salzman.—p. 685.
Congenital Arteriovenous and Cirsoid Aneurysms. H. D. Adams.—p. 693.
Diagonal Incision for Upper Abdomen. J. C. T. Rogers.—p. 698.
Cure of Vesical Neck Obstructions Due to Hypertrophy of Interureteric Ridge in the Male. O. S. Lowsley and E. Porras.—p. 701.
Intestinal Absorption of Oral Antibiotics in Traumatic Shock: Experimental Study. W. A. Altemeier, W. R. Culbertson and R. L. Coith.—p. 707.
Blood Volume and Blood Turnover in Thoracic Surgery as Determined by P^{32} Labelled Red Blood Cells. N. I. Berlin, D. F. Rowles, G. M. Hyde and others.—p. 712.
Acute Perforation of Peptic Ulcer: Early and Late Results. H. A. Kingsbury and E. E. Peacock Jr.—p. 717.
Parotid Tumors: Histopathology, Clinical Behavior, and End Results. J. W. Kirklin, J. R. McDonald, S. W. Harrington and G. B. New.—p. 721.
Incompatible Blood Transfusions with Emphasis on Acute Renal Failure. E. E. Muirhead.—p. 734.
Ovulation After Unilateral Oophorectomy, as Determined by Endometrial Biopsy and Basal Body Temperature. M. J. Whitelaw.—p. 747.
Calf Muscle Blood Flow, Before and After Operation and During Various Normal and Pathologic States. H. L. Reese, R. P. Darrow and M. L. Cullen.—p. 751.

Endometriosis in Rhesus Monkey.—An adult female rhesus monkey (Macaca mulatta) had dysmenorrhea, and post-mortem microscopic study disclosed extensive spontaneous endometriosis. The monkey had been under observation for approximately nine years and four months for behavior changes following bilateral removal of the prefrontal and temporal lobes. Her abdomen had never been opened until autopsy was performed. Four years after the last cerebral operation she had symptoms of severe dysmenorrhea and died two years thereafter on the seventh day of a menstrual period. The abdominal cavity was distended with blood and menstrual debris and showed extensive adhesions. The peritoneal surface of the uterus, adnexa, bladder, and pelvic wall was covered with a tissue that had all the characteristics of endometrium. It was in the process of menstruation; in some areas there had been little or no loss of tissue; elsewhere only a film of stroma remained. Various conditions developing after the second temporal lobectomy may be ascribed to an endocrine imbalance related to degeneration of fibers and injuries to the hypothalamus, e. g., hypersexuality, polydipsia, bulimia with progressive adiposity, and hyperplasia of the rete ovarii. It is suggested that the endometriosis also resulted from the endocrine dyscrasia. Except for the apparent implantations on the intestines, this case of endometriosis can best be explained as due to a metaplasia of the pelvic peritoneum.

Aureomycin in Peritonitis.—This report covers 235 cases of peritonitis in which aureomycin was used. There were 22 deaths, an over-all mortality rate of 9.36%. The mortality rate for all types of peritonitis in this series is compared with those found in the same hospital (Harlem) during the two years preceding this study, in which penicillin, streptomycin, and sulfadiazine were used. Adjuvant procedures of gastrointestinal decompression, maintenance of circulating fluid volume, and infusions and transfusions were practiced in both series of patients. A comparison of the two groups reveals a significant reduction in mortality since aureomycin has been used. Only seven (3.18%) of the deaths can be attributed to failure of the antibiotic therapy, and the rest were due to the surgical procedure or the patient's general condition. The mortality rates have been reduced by more than 50% in several of the categories reported as compared with the two previous years. Only in intestinal obstruction without resection was there an increase in mortality rate. The mixed bacteriologic flora of peritonitis contains organisms that are usually quite sensitive to aureomycin. Aureomycin is administered intravenously in 500 mg. doses twice daily. The dosage in children is proportionately less. Oral administration of a similar dose is begun as soon as gastrointestinal decompression can be discontinued. This dosage schedule has been checked by the aureomycin content of blood and peritoneal fluid, by in vitro sensitivity tests of various micro-organisms to aureomycin, and by the clinical results. Side reactions were minimal, and no organic toxicity was demonstrable. The phlebitis sometimes resulting from intravenously administered aureomycin hydrochloride has been eliminated by the use of the glycinated form. Aureomycin is considered the antibiotic of choice in the therapy of peritonitis.

Texas State Journal of Medicine, Fort Worth

47:263-318 (May) 1951

Cutaneous Reflections of Internal Diseases: Comments on Diagnosis and Treatment. J. L. Pipkin.—p. 267.
Inferior Oblique Muscle in Head Tilt. J. D. Walker.—p. 275.
Nasal Allergy. J. T. Hall.—p. 278.
Pressure Treatment of Purulent Maxillary Sinusitis. J. M. Robison.—p. 281.
Relationship of Dental Pathology to Diseases of Ear, Nose and Throat. M. P. Spearman.—p. 289.
Potassium Depletion: Syndrome and Treatment. E. R. Crews.
Atopic Cataract: Case Report. O. L. Zanek.—p. 294.
*Hyperthyroidism Produced by Orally Administered Thyroid Extract: Report of Case. R. Franken.—p. 297.
*Management of Newborn Infant with Symptoms Indicative of Myasthenia Gravis. J. G. Holt and A. E. Hansen.—p. 299.

Hyperthyroidism Produced by Thyroid Extract.—The case presented was that of a woman, 34, who, until six months prior to examination, had been taking 25 grains (1.62 gm.) of thyroid extract daily under a physician's supervision to lose weight. She had been taking thyroid one and one-half years, but only for the final 10 months did she take 25 grains daily. At the end of this time the patient discontinued the medication because she had become extremely nervous and was unable to sleep. Shortly afterward she noted uncontrollable tremor of the hands and short episodes of tachycardia. Exophthalmos began to develop, and the tremor, tachycardia, and nervousness became more conspicuous. Thus, the classic picture of hyperthyroidism continued to develop during the six months after discontinuance of the medication. The basal metabolic rate was + 34%. The patient was treated with strong iodine (Lugol's) solution, propylthiouracil, and a mild sedative. Eight weeks after the start of treatment a bilateral subtotal thyroidectomy was performed. Two months after the operation the woman was almost free from symptoms.

Myasthenia Gravis in Newborn Infant.—Symptoms indicative of myasthenia gravis observed in a newborn infant responded to the administration of neostigmine. In all of the four previously reported cases of this type, the infants were born to mothers with myasthenia gravis. Two of these infants died, and two survived. Infants born to mothers with myasthenia gravis should be observed during the neonatal period for symptoms of the disease. If such symptoms appear, immediate intramuscular administration of neostigmine is recommended as a therapeutic test and, provided a satisfactory response is obtained, treatment with the drug should be continued for at least three weeks.

FOREIGN

Archiv für klinische Chirurgie, Heidelberg

268:1-124 (No. 1) 1951. Partial Index

Penicillin Therapy of Acute Hematogenous Osteomyelitis of the Cervical Vertebrae: Contribution to the Problem of Conservative or Surgical Management of Acute Hematogenous Osteomyelitis Treated with Penicillin. K. Blanke.—p. 25.
*Present Status of Treatment of Idiopathic Megacolon in Children. H. Oberdalhoff.—p. 45.
Loss of Blood and Changes in Hematocrit Caused by Surgical Interventions. B. Löhr.—p. 74.
Renal Changes During Ileus. H. Eufinger.—p. 103.

Treatment of Idiopathic Megacolon in Children.—The form of megacolon appearing in adults is usually of the symptomatic type. This form increased during the postwar period of starvation. It usually yields to conservative measures. The idiopathic form, appearing in children, which is usually called Hirschsprung's disease, presents a more difficult therapeutic problem. In this form conservative methods usually fail. Interventions on the abdominal sympathetic, which a decade or two ago represented the chief surgical methods, have failed and are now generally rejected. Today operations on the colon itself are again the preferred methods of surgical treatment. Before the neurosurgical era the resection of the dilated portions of the colon usually took the form of a left-sided hemicolectomy. Observations on the seven children discussed by this author corroborated the good late results obtainable with this method. However, since it does not appear to remove the cause there is a possibility of further progression of the dilatation of the colon in the proximal portions. If this happens, then total colectomy must be done. More recent investigations into the cause of typical Hirschsprung's disease, in which the lower sigmoid portion is contracted, have induced some to resect this contracted portion of the colon, with preservation of the anal sphincter. However, it still has not been completely proved that this difficult method removes the cause. In the idiopathic form, with dilated rectum, resection of the sigmoid portion or the left-sided hemicolectomy remains the method of choice for the present.

Archivum Chirurgicum Neerlandicum, Arnhem

3:81-160 (No. 2) 1951. Partial Index

Technique, Indications and Results of Arthroplasty of Hip with Interposition of Inert Material. R. M. D'Aubigné.—p. 87.
Simple Apparatus for Nasal Administration of Oxygen. G. Bosman.—p. 116.
*Surgical Aid in Cases of Coarctation of Aorta Where Resection is Impossible. I. Boerema.—p. 119.
Artificial Stenosis of Aorta. I. Boerema, R. Germs and J. R. Blickman.—p. 123.
Pathology, Diagnosis and Treatment of Subdural Empyema. M. P. De Grood.—p. 128.
*Peptic Ulcer of Gallbladder. J. K. W. Kehrer and A. De Minjer.—p. 151.

Treatment for Coarctation When Resection Is Impossible.—Surgical treatment was tried by Boerema in 15 patients with stenosis of the aortic isthmus. End-to-end anastomosis of the aorta succeeded in nine patients and end-to-side anastomoses of the arcus aortae to the aorta descendens succeeded in four cases. One patient died; in this case the aorta was so degenerated that the sutures could not hold the diseased tissue. The case of another patient is presented in greater detail, because resection was impossible with any of the accepted methods. After the isthmus had been exposed, it was found that past the origin of the subclavian artery the aorta was very wide over a distance of about 5 cm. Beyond this the narrowed part was several centimeters long, and the aorta descendens distal to the stenosis was as thick as a pencil as far as the diaphragm. The afferent intercostal vessels were not dilated. It was impossible to effect a better inflow of blood in the aorta descendens, but it seemed essential to strengthen the dilated, balloon-like part of the aorta between the origin of the subclavian artery and the isthmus since it pulsated so much more than the arcus aortae that a future rupture seemed possible. The author decided to fortify the aortic wall in this region by placing around it a jacket of tissue, which might give rise to the formation of a substantial layer of connective tissue. A piece of skin from the thoracic wall from which all fat had been removed was placed around the arcus aortae and the pulsating bulbus. The patient recovered. The usefulness of this plastic method is difficult to prove, but it may be expected that the apparently ominous and fatal rupture has been postponed for a long time.

Peptic Ulcer of Gallbladder.—The case here reported is noteworthy not only because disorders of the gallbladder are rare in children, but also because the cause was exceptional. The patient was a girl, 9, who was hospitalized with severe abdominal pain and vomiting. A rather large tumor was felt below the edge of the liver but could not be identified at first. After numerous examinations had failed to clarify the case, laparotomy was done, and evidence of inflammation of the gallbladder was found. After this organ was removed, the patient made an uneventful recovery. A viscid, black-brown fluid containing some blood clots was found when the gallbladder was opened. No stones were found, but it was clear that there had been a hemorrhage into the gallbladder, which explained the enormous distention found at the start of the operation. After the bloody contents were washed out, a small black point could be seen close to the beginning of the cystic duct, at the side opposite the attachment to the liver, surrounded by a moderately thickened edge, thus imitating closely the shape of a peptic ulcer in the stomach. Further examination disclosed that the ulcer lay at the mouth of a small diverticulum. The mucosa of the diverticulum consisted of typical acid-producing gastric mucosa.

British Journal of Cancer, London

5:1-152 (March) 1951. Partial Index

Cancer of Lung in Relation to Tobacco. M. E. Daff, R. Doll and E. L. Kenneway.—p. 1.
Age Curve in Lung Cancer. R. Korteweg.—p. 21.
Trisethyleneimino-s-Triazine in Human Malignant Disease: Preliminary Trial. E. Paterson and J. Boland.—p. 28.
Coexistence at One Site of Two Neoplasms, One of Local Origin and One Metastatic. J. G. Jackson and W. S. C. Symmers.—p. 38.
*Investigation of Effect of X-Radiation on Localization of Radioactive Phosphorus in Breast Tumours. F. Ellis, C. Hoch-Ligeti and R. Oliver.—p. 45.
Preparation and Assay of Rous No. 1 Sarcoma Agent. J. G. Carr and R. J. C. Harris.—p. 83.
Further Observations on Liver Catalase Depressing Action of Tumours. D. H. Adams.—p. 115.

Radioactive Phosphorus in Breast Tumors.—Tracer doses of about 150 μc of radioactive phosphorus (P^{32}) were given intravenously to five patients with malignant breast tumors attached to the skin, and measurements were made with a beta counter applied directly to the skin, before, during, and after x-ray treatment, and, in one case, during a course of diethylstilbestrol treatment. The count rate recorded was much higher over the tumor (three to eight times), and to a lesser extent over the whole of that breast, than over corresponding sites on the normal breast. The exponential rate of disappearance of radioactive phosphorus was found to be approximately the same for both breasts, but after the second or third x-ray treatment a sudden fall was observed in the count rate over the tumor and over that breast relative to that over the normal breast. This result was obtained in all cases, including one in which both breasts received the same low voltage (140 Kv.) irradiation. No such change occurred during diethylstilbestrol treatment in a patient who did not respond clinically. After erythema had subsided the ratios of measurements over the two breasts were found to be similar to those before treatment.

British Journal of Ophthalmology, London

35:317-380 (June) 1951

Kerato-Conjunctivitis Sicca. A. Stanworth.—p. 317.
Surgery of External Rhinostomy Operations. B. W. Rycroft.—p. 328.
Observations upon Movements of Eyelids. G. Gordon.—p. 339.
In Vivo Examination of Lens by Phase-Contrast Microscope. J. François and M. Rabaey.—p. 352.
Appearance of Fluorescein in Aqueous or Glaucomatous Eyes. S. J. H. Miller and H. Swanljung.—p. 356.
Carcinoma of Lacrimal Sac. N. Ashton, D. P. Choyce and L. G. Fison.—p. 366.

British Medical Journal, London

2:1279-1342 (June 9) 1951

Health of the Nation. A. Daley.—p. 1279.
*Use of Cortisone in Diseases of Eye. F. S. Lavery, I. E. Werner, D. O'Donoghue and others.—p. 1285.
Topical Cortisone in Treatment of Syphilitic Ocular Disease. G. O. Horne.—p. 1289.
Some Notes on Physique and Athletic Training: With Special Reference to Heart Size. R. W. Parnell.—p. 1292.
*Diabetes and Pregnancy. J. C. Pease, V. Smallpeice and G. G. Lennon.—p. 1296.
Lymphocytic Choriomeningitis: Associated Human and Mouse Infections. E. H. R. Smithard and A. D. Macrae.—p. 1298.
Case of Chronic Neutropenia Treated by Splenectomy. J. R. Armstrong.—p. 1300.
"Refractory Anaemia" After Arsphenamine Diglucoside (Stabilarsan). C. N. Partington and W. Rogers.—p. 1301.

Cortisone in Diseases of the Eye.—Cortisone acetate ointment (25 mg. per gm.) and a 2.5% suspension of cortisone in isotonic sodium chloride solution (25 mg. per ml.) were used in the treatment of various diseases of the eye in 143 patients. It was concluded that the method of choice is, first, subconjunctival injection, followed by the instillation of cortisone drops every two hours during the day and the application of cortisone ointment to the conjunctival sac at night, the subconjunctival injection of cortisone being given every second day. The number of subconjunctival injections required varies from case to case, and local treatment should be continued until the inflammatory condition has subsided or until it is apparent that no response is being obtained. If a relapse occurs the treatment should again be instituted. Results showed that 30% of the patients were much improved, 27% were moderately improved, and 43% were therapeutic failures. Interstitial keratitis was particularly benefited, and iridocyclitis also improved rapidly in most cases. Treatment of two patients with sympathetic ophthalmia with systemic cortisone was successful. Cortisone is very valuable in the control of allergic reactions in the eye but has no effect on any underlying disease that may be the basic condition. The good effects of locally applied cortisone are confined to conditions involving the anterior segment of the eye. In those of the posterior segment amenable to cortisone treatment, its parenteral use is indicated. The local use of cortisone produced disappointing results in scleritis. For this condition it seems necessary to give cortisone parenterally.

Diabetes and Pregnancy.—A series of 25 consecutive diabetic pregnancies beyond the 28th week is reported. No mother died, and 23 babies are living. The remaining two were stillborn. In 12 of the mothers diabetes mellitus developed between 21 and 30; eight patients were under 21 and five were over 30. One patient was observed to have diabetes mellitus a few days before delivery; the remainder, with two exceptions, had attended the diabetic clinic regularly. Eight were nulliparous, 10 had had one child, and seven had had two or more children. Two patients were stabilized on diet alone; three required less than 20 units of insulin, and 14 required more than 60 units each day. Twenty-one patients had their diets increased, 17 their insulin increased, three their insulin reduced, and the remainder required no change. Hormone treatment was not used, because biological assay could not easily be done and because uncontrolled use of estrogens was thought undesirable. In eight patients hypertension developed, in eight edema, in one albuminuria, and in one postpartum eclampsia. Six patients had hydramnios, an incidence of 23%, which was higher than usual. Delivery was spontaneous in four; medical or surgical induction was practiced in 12; and cesarean section was performed in nine. For both primigravida and multigravida, cesarean section is being more readily employed. The good neonatal results obtained confirmed the authors' belief that termination in the uncomplicated case should be undertaken just before the 36th week of pregnancy and that delivery should be completed by the end of the 36th week. If the close cooperation of the obstetrician and the physician can reduce stillbirths and intrauterine deaths, allowing the well-controlled diabetic mother to be delivered of a living baby, then the infant should stand a good chance of survival even when it is born at the 36th week. After birth the skill of the nursing staff in providing careful neonatal control without overtreatment of the baby is the most important factor in reducing neonatal deaths.

Deutsche medizinische Wochenschrift, Stuttgart

76:757-788 (June 8) 1951. **Partial Index**

Incidence of Hemorrhages During Pregnancy That Resemble Menstruation: Their Genesis. H. Goecke.—p. 763.
*Therapeutic Use of Radioactive Phosphorus in Polycythemia Vera. F. Odenthal.—p. 765.
Medical Treatment of Intestinal Occlusion. P. Busse Grawitz.—p. 767.
Slow-Acting Estrogenic Hormone Therapy in Carcinoma of Prostate. H. Rosolleck.—p. 770.
Chloromycetin® in Treatment of Salmonella Infections. P. Christ.—p. 772.

Radioactive Phosphorus in Polycythemia Vera.—In his evaluation of treatments used in polycythemia vera, Odenthal gives particular attention to radioactive phosphorus, P^{32}, first used by investigators in the United States in 1940. He himself used this substance during the past two years in 19 patients with polycythemia vera. He injected the substance intravenously in the form of an isotonic solution of sodium phosphate. Radioactive phosphorus has a half-life of 14 days. A portion of it (in some cases up to 30%) is rapidly excreted in the urine. Thus the biologic half-value time is less than the physical half-value-time. Radioactive phosphorus, just as ordinary phosphorus, is deposited in organs that have a high rate of phosphorus metabolism, in patients with polycythemia chiefly in the bone marrow. So that natural phosphorus would not replace the isotopic phosphorus too rapidly, the phosphorus content of the diet was kept low for a time. Radioactive phosphorus represents a causal therapy for polycythemia vera in that the blood-forming organs in the bone marrow are being irradiated and the hematopoiesis is thereby inhibited. Radioactive phosphorus has no hemolytic effect on the circulating erythrocytes. Thus, the therapeutic effect becomes evident in the decrease in erythrocytes only after from six to 10 weeks, when the circulating erythrocytes have completed their life span. A noticeable decrease in reticulocytes, however, is evident earlier. The leukocyte and thrombocyte counts also decreased, but with cautious dosage irreversible changes were not observed in organs other than the erythropoietic ones. The initial dose of radioactive phosphorus was usually 3 to 5 mc. Since the action of this dose persists for about three months, additional doses are not given before this period has elapsed. In a few rare cases a single injection was sufficient, but usually two or three injections were given. The total dose in individual cases varied between 3.5 and 18 mc. Good results were obtained in the 19 patients treated with this method who have been followed for up to two years. The histories of four of these patients are presented.

Edinburgh Medical Journal

58:153-196 (April) 1951

Tubal Factor in Female Sterility. G. D. Matthew.—p. 153.
Brill-Symmers' Disease. H. Russell.—p. 170.
Notes on History of Paediatrics in Scotland. H. P. Tait.—p. 180.

Gastroenterologia, Basel

76:319-382 (No. 6) 1951. **Partial Index**

Etiology of Early Post-Gastrectomy Syndrome. W. M. Capper.—p. 319.
*Post-Mortem Investigation into Relation of Peptic Ulcer with Other Medical Disorders. G. Watkinson.—p. 325.
*Hirschsprung's Disease. M. Bodian.—p. 339.
Further Studies in Radiology of Small Intestine. J. M. French.—p. 343.
Mucinases in Ulcerative Colitis. H. G. Sammons.—p. 346.

Relation of Peptic Ulcer to Other Disorders.—An analysis of 1,992 consecutivce post-mortem examinations between 1931 and 1933 showed an over-all incidence of peptic ulcer of 18.23%. In 1,228 male patients the incidence was 21.8% and in 764 female patients the incidence was 7.9%. Gastric ulceration was slightly commoner in women than in men (1.0:0.88), while duodenal ulceration was commoner in men (2.75:1.0). In men duodenal lesions were between three and four times commoner than gastric lesions, while the lesions were of equal incidence in women. An investigation into the relationship of ulcer lesions and other pathological conditions indicated a possible tendency to peptic ulceration in young patients with coronary sclerosis and in young male patients with pneumonia and other acute infections. Female patients between 45 and 54 with gallbladder disease also showed a tendency to peptic ulcer.

Hirschsprung's Disease.—Clinical, radiological, and pathological studies on megacolon and, in particular, of Hirschsprung's disease have produced a new etiological concept which localizes the primary pathological process in the undilated segment of bowel distal to the hypertrophied and dilated part. An agenesis of ganglion cells in the intramural plexuses of that segment results in absence of normal peristalsis. Removal of that part of bowel by rectosigmoidectomy is claimed to be the rational treatment of Hirschsprung's disease and has given remarkable results.

Glasgow Medical Journal

32:121-158 (May) 1951

Osteomyelitis: Historical Survey. W. M. Dennison.—p. 121.
Recent Advances in Diagnosis of Congenital Heart Disease. G. J. Aitken. —p. 129.
*Use of Hyaluronidase to Facilitate Cutting of Free Skin Grafts Under Local Anaesthesia. J. A. Cameron.—p. 150.

Hyaluronidase to Facilitate Cutting of Free Skin Grafts.—Experience with hyaluronidase in the administration of fluids subcutaneously suggested its use in the cutting of skin grafts with the patient under local anesthesia. In the past, the use of local anesthesia for this purpose presented technical difficulties. Owing to lack of "spread," multiple skin punctures were required and the resulting skin surface was irregular or undulant, thus adding to the difficulty of cutting the grafts, and resulted in undesirable variation in thickness of skin and, not infrequently, multiple perforations. Then there was the risk of "islands," where anesthesia was either absent or incomplete. As a result, surgeons were reluctant to use local anesthesia except for small areas of skin. This was unfortunate in that many patients with burns are debilitated and not good subjects for general anesthesia. At the Royal Infirmary in Glasgow hyaluronidase has been used in 32 patients who required skin grafting for burns. Some of them were selected because they were unfit for general anesthesia. Hyaluronidase was added in the proportion of 1 mg. to 4 oz. (125 cc.) of 1% procaine solution. The addition of 1 in 1,000 epinephrine (5 minims to the ounce) helped to delay absorption of the anesthetic and, by causing blanching of the skin, demarcated the anesthetic area. In nervous patients, preoperative basal narcosis was administered subcutaneously. The donor area was the thigh. After preparation of the skin, the donor area was outlined with dye and the initial puncture was made at the upper end of the area and the solution injected fan-wise from here. There is visible spreading of the solution. Further injections are made into the already anesthetized skin, until the whole donor area has been infiltrated. The anesthetic solution spreads quickly and evenly and leaves a smooth, flat surface from which a graft can be cut with no more difficulty than when a general anesthetic is used. The injection of the anesthetic solution is less uncomfortable and painful than usual. In these cases, healing of the donor areas occurred normally.

Journal of Laryngology and Otology, London

65:397-460 (June) 1951

Observations on Abductor Paralysis of Vocal Cords. A. F. Williams. —p. 397.
Some Observations on Conduction Mechanism of Ear. N. W. Gill. —p. 404.
Latent Tuberculosis in Tonsils and Adenoids: Study of 127 Cases. A. Belal.—p. 414.
Lipoma of Larynx. A. C. Maconie.—p. 426.

Journal de Médecine de Lyon

32:511-560 (June 5) 1951

Vaginal Smears in the Menopause. E. Pollosson, P. Haour and A. Ranchet.—p. 511.
Physiopathological Sequelae of Gastrectomy for Ulcer. M. Girard and R. Chabanon.—p. 521.
*Effects of Bilateral Splanchnicectomy (Adrenal Enervation) on Progressive Chronic Inflammatory Rheumatism. J. Graber-Duvernay, J. J. Herbert, F. Gerbay and others.—p. 537.

Splanchnicectomy for Rheumatoid Arthritis. — Splanchnicectomy, with section of the great splanchnic nerve where it branches off into the suprarenal ganglion and into the celiac ganglion, was performed on five patients between the ages of 26 and 57 with rheumatoid arthritis (chronic progressive polyarthritis). Bilateral splanchnicectomy in two stages, with an interval of 15 to 25 days between the interventions, was performed on three patients, and unilateral splanchnicectomy on the two others. In general, the operation was well tolerated, except for severe fronto-occipital headache for three to four days after the intervention in one patient. Temporary lumbosacral hypesthesia of several weeks' duration was noted in all patients. Within eight hours of the intervention the pain in the joints disappeared or, in joints with old destructive lesions, became less severe. The inflammatory changes responded more slowly, but they too regressed within four days. It became possible to discontinue the administration of acetylsalicylic acid (aspirin), and walking could be resumed within 10 to 12 days after the intervention. The duration of this clinical improvement varied considerably, depending on the importance of the joint lesions. The sedative effect of the intervention did not last longer than 30 to 40 days in the presence of bone lesions, but its duration was prolonged in patients with only inflammatory changes. The follow-up period of four to five months was too short for evaluation of the full effect of the intervention. Biologic tests showed a diminution of the lymphocytes and eosinophils, an increase in polynuclears, and hyperglycemia associated, in four patients, with temporary glycosuria. A therapeutic trial with corticotrophin failed in two patients, who again had severe joint pain 2 months after the splanchnicectomy. On the contrary, cortisone proved extremely effective when it was substituted for corticotrophin. Pain subsided within a few hours, and at the same time the sedimentation rate was reduced. Doses of 75 mg. and then 50 mg. of cortisone were given daily, with a total dose of 1.25 gm. Pains reappeared after one month but again could be controlled with daily doses of 25 mg. of cortisone. Splanchnicectomy, by severing an adrenohypophysial interrelaship, entails temporary hyperfunction of the adrenal cortex and reduces the pituitary tutelage. It thus increases the substitutive effect of cortisone, which in small doses is highly effective in patients who have undergone splanchnicectomy, to whom cortisone may be given without risk for indefinite periods, provided that improvement is persistent.

Lancet, London

1:1239-1286 (June 9) 1951

Renal Failure. R. Platt.—p. 1239.
Training of Dressers in Tissue-Craft. P. Clarkson.—p. 1242.
*Significance of Convulsions in Children with Purulent Meningitis. C. Ounsted.—p. 1245.
Clinical and Laboratory Observations in Smallpox Outbreak. T. Anderson, M. A. Foulis, N. R. Grist and J. B. Landsman.—p. 1248.
Hyaluronidase: Assay and Administration. D. G. Evans, F. T. Perkins and W. Gaisford.—p. 1253.
Concentration of Penicillin in Lungs: Effects of Two Penicillin Esters in Chronic Pulmonary Infections. A. G. S. Heathcote and E. Nassau. —p. 1255.
Tetraethylammonium Bromide in Toxaemia of Pregnancy. J. G. Dumoulin. —p. 1257.
Torulosis of Central Nervous System: Effects of Changes in pH and Temperature on Growth of Causal Organism. W. H. Mosberg and J. A. Alvarez-DeChoudens.—p. 1259.

Convulsions in Purulent Meningitis.—This report concerns 90 consecutive patients with purulent meningitis admitted to the children's departments of the United Oxford Hospitals between November, 1946, and March, 1950, who received the chemotherapy appropriate for the infecting organism. Children who did not receive the appropriate chemotherapy and children with tuberculous and nonbacterial meningitis were excluded. The causal organisms were meningococcus (56 cases), Haemophilus influenzae (17 cases), pneumococcus (11 cases), beta-hemolytic streptococcus (two cases), and Staphylococcus aureus, Staph. albus, Escherichia coli, and Bact. paracoli (one case each). It was found that purulent meningitis in young children carries a 20% mortality rate in spite of adequate chemotherapy. A close association exists between failure of treatment and the occurrence and intensity of convulsive seizures. Multiple seizures carry a grave prognosis. Possibly both the failure of treatment and the seizures spring from the common root of irreversible cerebral damage. There is, however, evidence that the seizures are themselves harmful. In the patients who received prophylactic phenobarbital the reduction in failure-rate

ran parallel with the reduction of the seizure-rate; this suggests that the anticonvulsant may well have lowered the failure-rate by raising these children's resistance to seizures. Further, convulsions may progress to status epilepticus, and this syndrome, if uncontrolled, is fatal. Routine prophylaxis with phenobarbital is safe and may lead to a reduction in the mortality rate. Rapid and intensive treatment of established convulsions is indicated. The drug of choice is not yet established, but the results of trials with intramuscularly administered amobarbital sodium are promising. When convulsions are prevented or do not occur recovery follows in 96% of the cases.

Maandschrift v. Kindergeneeskunde, Leyden

19:109-144 (No. 4) 1951. **Partial Index**

*Suppurative Pericarditis: Conservative Treatment with Penicillin. A. Dekker-Jonker, H. G. Huibregtse-Meyernik and H. A. P. Hartog.—p. 112.
*Frequency and Duration of Excretion of Tubercle Bacilli in Sputum in Primary and Postprimary Forms of Pulmonary Tuberculosis. C. Dijkstra.—p. 119.
Posterior Arachnoiditis Caused by Nematodes. T. P. J. Botman.—p. 141.

Penicillin in Suppurative Pericarditis.—A rare example of acute suppurating pericarditis in a child is reported. A boy, 2, had high fever that did not subside following treatment with sulfonamide preparations. The symptoms, electrocardiographic record, and chest roentgenogram led to a diagnosis of exudative pericarditis. Puncture in the fifth intercostal space yielded 70 cc. of seropurulent fluid, which indicated acute suppurating pericarditis. The cause seemed obscure at first, since the child had not had pneumonia with empyema, nor typhoid, nor osteomyelitis, but impetigo had been present for a rather long time. The pericardial puncture was followed by the injection of 25,000 units of penicillin into the pericardial sac. Intramuscular injections of 25,000 units of penicillin were given every three hours. Culture of the purulent pericardial fluid yielded a nonhemolytic Staphylococcus, which proved sensitive to penicillin. Daily pericardial punctures revealed that at first the suppuration continued to increase. Quantities of 50 to 300 cc. of pus were evacuated at each puncture, which was always followed by the instillation of 50,000 units of penicillin into the pericardium. The general condition improved slowly, and the fluid finally disappeared. However, after many weeks generalized edema and oliguria suddenly developed. Both were counteracted by a mercurial diuretic. Complete recovery followed. A year later the child felt well and no signs of constrictive pericarditis were present. Thus the purulent pericarditis had yielded to conservative therapy.

Tubercle Bacilli in Sputum in Pulmonary Tuberculosis.—Frequent sputum cultures were made on 106 patients with primary and postprimary forms of pulmonary tuberculosis. It was found that in 82% of the patients in whom active pulmonary lesions persisted, excretion of tubercle bacilli persisted for one to 20 months. Nine patients in whom the pulmonary process had become clinically inactive still showed intermittent excretion of tubercle bacilli. Sixteen patients (15% of the total number) showed no further excretion of tubercle bacilli up to at least five months before the end of the sanatorium treatment (10 successive sputum-cultures or cultures of the gastric lavage were negative). Owing to the fact, however, that prolonged intermissions in the excretion of tubercle bacilli had previously occurred, it is doubtful if the pulmonary process may be considered as really "closed" in these cases. In 79 cases (that is 74.5% of the total) the sputum became apparently permanently negative after a more or less regular discharge of tubercle bacilli had existed for a variable period.

Medical Journal of Australia, Sydney

1:569-604 (April 21) 1951

Bringing up Children. D. W. H. Arnott.—p. 569.
Retropubic Prostatectomy: Comparison Between Its Results and Those of Previous Methods over Three-Year Period. N. L. Newman.—p. 574.
Note on Hypoxia During Nitrous Oxide Anaesthesia in Dentistry. G. Kaye.—p. 577.
*Methaemoglobinaemia Due to Aniline. S. E. L. Stening.—p. 578.

Methemoglobinemia Due to Aniline.—This is a report of a boy, 14, whose trousers, handkerchief, and fingers became contaminated with aniline liquid in a chemistry laboratory when he sat on a chair on which the liquid had been spilled. After about 90 minutes of exposure to the aniline fumes he complained of a headache, and within another 90 minutes he showed, progressively, pallor, circumoral cyanosis, unsteadiness of gait, and collapse. Following hospitalization, he vomited, and the cyanosis increased. Oxygen was given until methylene blue could be obtained. When the latter was injected intravenously, recovery followed. Aniline, a colorless, volatile liquid that turns brown on exposure to air, gives off fumes that may be inhaled. In this case the exposure from the patient's trousers, the handkerchief in his pocket, and his fingers, which may have been conveyed to his mouth, was almost sufficient to cause his death. If such a potent chemical does come in contact with clothing, the clothing should be removed and the body should be washed under a shower. Methylene blue should be generally available for instant use in such cases. Whereas ingestion of colored wax crayons causing aniline poisoning and methemoglobinemia has been reported repeatedly, this seems to be the first case in which such poisoning was produced by the pure chemical.

1:605-636 (April 28) 1951

Nasal Plastic Surgery. A. B. K. Watkins.—p. 606.
Report of Investigation into Outbreak of Poliomyelitis in Small Town Remote from Melbourne. B. P. McCloskey.—p. 612.
*Relation of Prophylactic Inoculations to Onset of Poliomyelitis: Study of 620 Cases in Victorian Epidemic of Poliomyelitis in 1949. B. P. McCloskey.—p. 613.
Management of Infected Hand: Based on Clinical Investigation of 513 Cases. A. R. Murray.—p. 619.

Prophylactic Inoculations and Poliomyelitis.—There were 675 cases of poliomyelitis reported in Victoria from January to November, 1949; of these, 620 were investigated with regard to a possible relation of prophylactic inoculations to the onset of poliomyelitis. In 53 patients who had received an injection of diphtheria toxoid or pertussis vaccine, alone or in combination, within three months of the onset of symptoms exact information on the date and site of injection could be obtained. The severity of paralysis in the last inoculated extremities of children who had received pertussis vaccine alone or in combination was greater than in those of children who had received diphtheria toxoid alone and also greater than in the corresponding extremities of noninoculated children. Thus there is evidence that recent inoculations of pertussis vaccine alone or in combination with diphtheria toxoid are more likely to be followed by paralysis than recent inoculations of diphtheria toxoid alone and that the paralysis following inoculations with pertussis vaccine alone or in combination is more severe than that following inoculations with diphtheria toxoid alone.

Nordisk Medicin, Stockholm

45:745-786 (May 16) 1951. **Partial Index**

Influence of Age and Environment on History of Tuberculosis in Converters. G. Hertzberg and L. Riddervold.—p. 747.
Resection Treatment of Pulmonary Tuberculosis. K. Rogstad.—p. 753.
Cytology of Bone Marrow and Iron Metabolism in Experimental Infection. C.-A. Adamson, N. S. E. Andersson and I. Bergström.—p. 758.
*Peroral Treatment of Polycythemia Vera with Betanaphthyl-Di-Chlorethylamine (R 48). K. Iversen and E. Meulengracht.—p. 762.
Vertebral Hemangiomas. J. Jenssen.—p. 768.
Congenital Adenoma in Rhinopharynx Combined with Palatoschisis. K. Zilstorff-Pedersen.—p. 771.

Peroral Treatment of Polycythemia Vera with Betanaphthyl-Di-2-Chlorethylamine (R 48).—In five of six patients with long-standing polycythemia vera definite remission followed peroral treatment with betanaphthyl-di-2-chlorethylamine for from some weeks to two months. Iversen and Meulengracht advocate a beginning dose of from 500 to 600 mg. daily for two months, then reduction of the dosage. A maintenance dose of 200 mg. daily is at present giving good results in two instances. Polycythemia vera is in itself a benign disease, and close and regular control of the blood cell count during treatment is necessary because of the possible toxic effect of betanaphthyl-di-2-chlorethylamine on the bone marrow.

Presse Médicale, Paris

59:869-888 (June 20) 1951

*Sclerosis of Adrenal Medulla: Treatment of Human Arterial Hypertension. M. Riser, Lavitry, Gleize and Rascol.—p. 869.
Acute Porphyria Treated by Exchange Transfusion. M. Deparis, J. Canivet, J. Dausset and P. Rossignol.—p. 870.
Symptomatic Triad Linked to Cardiovascular System in Hypoglycemic Shock. B. Yagdjoglou.—p. 872.

Sclerosis of Adrenal Medulla and Arterial Hypertension.—Using the technique of Mandache and co-workers, Riser and associates produced sclerosis of the adrenal medulla in 10 adult dogs by injecting 1 to 2 cc. of 30% salicylic acid in 20% hypertonic solution of polyvinyl-pyrrolidone ("subtosan") into the adrenal medulla at three different points. Neither acute nor subacute adrenal insufficiency was observed. On an average, 75% of the medullas of the 20 adrenal glands studied were destroyed, while the cortices remained almost unimpaired, without any drop in arterial tension or blood sugar, or any disturbance of water and sodium chloride metabolism. In seven patients with arterial hypertension who first were subjected to Smithwick's thoracolumbar sympathectomy, sclerosis of the adrenal medulla was produced by ligature of the large suprarenal vein followed by an injection of 4 to 5 cc. of the salicylic acid-polyvinyl-pyrrolidone solution into the medulla at three different points at a distance of 1 to 2 cm. The diastolic arterial pressure of 130 to 150 mm. of mercury in these patients had been reduced by 10 to 15 mm. as the result of 10 days of bed rest and salt free diet before the intervention. This "tension at rest" was considerably reduced by the Smithwick operation combined with artificial sclerosis of the adrenal medulla. In some of the patients drop in systolic and diastolic pressure by several centimeters occurred rapidly, within two to three days, suggesting a temporary inhibition of the adrenal cortex and requiring injections of extract of total adrenal cortex. In some patients the greatest lowering of the arterial pressure occurred within five to 10 days. In one patient, aged 46, with severe stenosing arteriosclerosis of the temporal artery, the drop in arterial tension was insignificant and only temporary, but in two women, aged 30 and 33, with malignant hypertension and less pronounced arterial narrowing the drop in arterial tension was pronounced and prolonged. For the first two weeks after the intervention the urinary 17-ketosteroids must be determined repeatedly. Although neither acute nor subacute adrenal insufficiency was observed in the authors' patients, the 50 to 60% diminution of the 17-ketosteroids suggested considerable temporary inhibition of the adrenal cortex. It seems, therefore, necessary to administer 25 to 30 mg. of desoxycorticosterone acetate and extracts of total adrenal cortex in oily solution for three days before the intervention and for a period after the intervention until the normal 17-ketosteroid level has been restored. As a rule, Thorn's test should be performed before and after each sclerosing intervention, since administration of cortisone may be required in certain cases. Because of the anatomic disposition of the adrenal medulla, its complete and elective destruction without impairment of the cortex may not always be obtained, but when done cautiously this intervention may be a valuable adjuvant of conservative treatment and of Smithwick's operation for arterial hypertension.

Revista Clínica Española, Madrid

40:211-286 (Feb. 28) 1951. Partial Index

*Treatment of Localized Choreo-Athetosis by Resection of the Motor Cortex. J. R. Boixadós.—p. 228.
*Cholecystography by Oral Administration of Tetraiodophenolphthalein. J. Sánchez San Julián and A. Pascual y Mejías.—p. 232.
*Typhobacillosis and Tuberculous Meningitis. J. J. Herrera Rojas.—p. 242.

Treatment of Localized Choreo-Athetosis by Resection of Motor Cortex.—Boixadós obtained good results from resection of an area of the contralateral motor cortex by Bucy's technique in various cases of involuntary movements and in a case of unilateral choreo-athetosis of the right arm and right foot. This case is reported in detail. The author states that the contralateral motor cortical area to be resected should be delimited by electrical stimulation during the operation and that resection of the delimited area should be ample. Repeated electroencephalograms should be taken after the operation. The findings of abnormal waves and abnormal rhythms in the electroencephalograms, indicating the possibility of development of epileptigenic foci in the future are indications for prolonged administration of anticonvulsive drugs. In the case of choreo-athetosis reported by the author the condition had lasted for 16 years. The operation resulted in perfect control of involuntary movements and almost total recovery of normal movements. The patient had only one attack of Jacksonian epilepsy, which occurred a few months after the operation and was controlled by anticonvulsive treatment. Good results are maintained up to now, eight months after the operation.

Cholecystography by Oral Administration of Iodophthalein.—Sánchez San Julián and Pascual y Mejías performed cholecystographies with iodophthalein administered orally to 209 patients of either sex with diseases of the gallbladder and of the liver. The test gave positive results in 167 patients (80%). The authors found that the percentage of positive results is higher when cholecystography is performed after oral administration of iodophthalein than when iodoalphionic acid (priodax®) is given or when iodophthalein is given other than orally. The authors stress the need for a careful technique in cholecystography.

Typhoid-Like Bacillemia in Tuberculous Meningitis.—According to Herrera Rojas, tuberculous meningitis and miliary tuberculosis in young persons are preceded by a long period of tuberculous septicemia. The clinical symptoms are those of a bacillary infection. The clinical course is similar to that of typhoid. Erythema nodosum is present in all cases of this type that show spread of tuberculosis, and the Pirquet tuberculin reaction is strongly positive. The positivity diminishes or disappears if intercurrent infection develops. The diagnosis of tuberculous bacillemia is mainly based on (1) the clinical course of this period of the disease, (2) the presence of erythema nodosum, and (3) the positive results of the Pirquet tuberculin test and the results of the roentgen examination of the chest. Streptomycin administered in the period of tuberculous bacillemia prevents spread of tuberculosis and tuberculous meningitis.

Riforma Medica, Naples

65:365-392 (April 7) 1951

Adrenocorticotrophic Hormone and Bronchial Asthma. A. Morelli and M. Mazella Di Bosco.—p. 365.
*Late Changes in Blood Picture Following Gastric Resection. D. Mainiero. —p. 367.
Comparative Studies on Measurement of Allergy from Intradermal and Percutaneous Reactions. F. Nuti and A. Cherubini.—p. 370.
*Clinical Study of Post-Transfusion Hepatitis. L. Magnanelli.—p. 378.

Late Blood Changes Following Partial Gastrectomy.—A study was made on 20 patients four to 14 years after they had undergone partial gastrectomy. The amount of hemoglobin and the number of red blood cells were compared with the preoperative values. The author considered 4,500,000 as the lowest normal limit for red blood corpuscles and 90% for hemoglobin. The number of erythrocytes was above 4,500,000 in 15 cases, between 4,000,000 and 4,500,000 in three cases, and under these figures in two cases. It increased in 12 patients, did not change in six, and slightly diminished in two. Hemoglobin was 80% or above 80% in all cases; it increased in 11 patients and slightly diminished in nine. Mainiero concludes that anemia following gastric resection is very rare, even a long time after the operation. In cases in which it does occur it may be determined by factors that were present before or at the time of the intervention.

Post-Transfusion Hepatitis.—Of 220 persons who had blood transfusion and who were discharged from the hospital of an Italian region where viral hepatitis has been present for several years, jaundice developed in 10 (4.5%) after an average incubation period of 50 to 100 days from the transfusion time. In onset and clinical course the disease was similar to, but milder than, acute infectious hepatitis. However, these cases could not be classified as spontaneous viral hepatitis, because of the long period of incubation. Nor could they have been caused by infection occurring after the patients were discharged, because the disease developed in one person who was not living in the infected section of the country. At the time of the transfusion six of the 10 patients had diseases involving liver disturbances.

Also, of 4,100 who did not have blood transfusions and who were discharged from the same hospital only one woman showed this type of jaundice. She had been given calcium intravenously, and this case was classified as jaundice "from syringe." Thus, the author concludes that the 10 patients had post-transfusion hepatitis and that the number of healthy carriers of the icterogenic virus is large. He suggests a thorough examination of the donors' conditions, with the exclusion of those who have had, or show signs of, liver disturbances. Instruments should be autoclaved for 15 minutes at 150 C. or dry sterilized for one hour at 160 C.

Schweizerische medizinische Wochenschrift, Basel

81:545-564 (June 9) 1951. **Partial Index**

Differential Diagnosis of Glycosuria. G. R. Constam.—p. 545.
*Studies on Hyperventilation Tetany: Simplification of Pathogenesis of Tetany. K. Lenggenhager.—p. 548.

81:565-588 (June 16) 1951. **Partial Index**

Conservative Treatment of Thrombosis and Embolism in Gynecology and Obstetrics, Compared to Anticoagulant Therapy. W. R. Merz, M. Etterich and C. Scacchi.—p. 565.
*Studies on Hyperventilation Tetany: Simplification of Pathogenesis of Tetany (Concluded). K. Lenggenhager.—p. 568.

Hyperventilation Tetany.—Total conduction anesthesia of all the nerves of the hand by the administration of a 2% procaine hydrochloride solution was produced in healthy persons between the ages of 24 and 30. With the persons experimented on in recumbent position, hyperventilation tetany then was produced by maximum rapid and deep breathing, but the anesthetized and completely motor-paralyzed muscles of the palm remained flaccid. During hyperventilation the subjects, however, experienced pronounced formication in the completely paralyzed and totally anesthetized hand. It was thus demonstrated that this formication was projected from the center (brain) to the periphery. Pronounced psychic disturbances occurred rapidly in the course of hyperventilation even before the occurrence of tetany. These were revealed by writing tests. These disturbances further prove that hyperventilation tetany is mediated by the brain. Hyperventilation tetany has no primary connection with oxygen deficiency and alkalosis but depends on the diminution of the blood calcium ions in the presence of a normal total calcium content resulting from the pronounced pH deviation to the alkali side. This was proved by the observation that tetany subsided soon after the administration of acid (5% carbon dioxide in the inspired air), while calcium injections given during hyperventilation were ineffective. The concept that respiratory tetany depends on the diminution of the ionized calcium also applies to the tetany resulting from parathyroid hormone deficiency. That other forms of tetany do not yet seem to fit this concept may be due to the lack of satisfactory methods for the determination of the degree of ionization of blood calcium, to incomplete knowledge of the inhibiting effect of alkalies on calcium ionization, or to the fact that tetany may be elicited, without decreased calcium ionization, by central noxae acting on the same area of the brain that is affected by calcium deficiency (intoxication tetany due to guanidine). The absence of the prolonged S-T interval in the electrocardiogram taken in persons with hyperventilation tetany should not be used as an argument against the concept of diminished ionization of calcium, because the constantly working heart muscle produces enough locally effective lactic acid to restore the deficient ionization of the hyperventilation-calcium to near normal.

Semaine des Hôpitaux de Paris

27:1761-1812 (June 2) 1951

Part Played by Portal Hypertension in Pathogenesis of Cirrhotic Ascites: Its Demonstration by Portal Radiomanometric Technique. J. Caroli, A. Paraf and V. Schwarzmann.—p. 1761.
Study of Certain Multilobular Gallbladders. J. Caroli, A. Paraf and Beaugrand.—p. 1776.
*Treatment of Cirrhotic Ascites by Fractional Tapping at Short Intervals. J. Caroli and A. Paraf.—p. 1786.

Treatment of Cirrhotic Ascites.—In patients with cirrhosis of the liver associated with pronounced ascites and edema of the lower extremities, respiratory and gastrointestinal distubrances, oliguria and anorexia, one should attempt first to restore the distended abdomen to its normal condition and to maintain the latter by the technique of fractional and repeated tapping. A strictly salt-free diet may be employed only as an adjuvant. The authors do not share the view of other hepatologists that paracentesis should be done at very long intervals and as rarely as possible, because it then requires the removal of large amounts of fluid, which probably causes hypotonicity of the interstitial fluid, thus favoring cerebral edema and causing coma and death. Treatment by repeated small punctures should be divided in two periods as follows: during the first 10 to 15 days, 1½ to 2 liters of fluid should be removed daily, so that a larger fraction than that formed each day is removed. At the slightest sign of intolerance, such as abdominal pain with or without diarrhea, smaller amounts of fluid should be removed. During the second period, that of maintenance, as much fluid should be drawn off as is formed each day or two, i. e., ½ to 1 liter. Experience with this method of treatment in 21 cirrhotic patients with pronounced intractable ascites suggests that they are no longer invalids; it became possible to place them on a high caloric and protein diet providing adequate alimentation with satisfactory digestion. Edema disappeared completely and permanently. In one of the patients 111 liters of ascitic fluid were removed in 33 tappings in the course of eight months. Although 1,110 gm. of proteins were removed, they were compensated for by the better alimentation made possible by this method of treatment. The amount of water and of electrolytes removed was equal to that usually eliminated by mercurial diuretics, which often are not well tolerated by cirrhotic patients, in whom the diuretics may become ineffective more rapidly than in cardiac patients. Four patients were therapeutic failures and death resulted after four to nine weeks of treatment. Necropsy revealed massive and irremediable destruction of the liver parenchyma despite drying up of the ascites. The authors caution against treatment with repeated fractional tapping in patients with refractory anorexia.

South African Medical Journal, Cape Town

25:349-364 (May 26) 1951

Cortisone in Eye Disease: Three Case Reports. R. A. Trope.—p. 349.
Generalized Developmental Osseous Dystrophies: II. Achondroplasia W. P. U. Jackson.—p. 350.
*Carbon Tetrachloride Poisoning by Inhalation. J. J. Prag.—p. 351.
Lymph Drainage of Breast. R. Singer.—p. 355.
Streptomycin and P.A.S. Sensitivity in Tuberculosis: Rapid Method for Testing Numerous Specimens: Preliminary Report. A. M. Beemer.—p. 357.

Carbon Tetrachloride Poisoning by Inhalation.—The patient whose case is presented had inhaled carbon tetrachloride on Dec. 1, 1950, while cleaning electrical equipment with a carbon tetrachloride spray. Soon after inhalation he felt faint and dizzy, and he vomited; about 15 minutes later he complained of severe frontal headache. Three days later jaundice appeared and the liver was found to be tender and enlarged. The jaundice became more severe; purpuric spots developed all over the body; and there were recurrent attacks of epistaxis. The urinary output was low and contained albumin. Dyspnea developed; vomiting continued; and the patient died 12 days after the inhalation of carbon tetrachloride, despite adequate treatment. Necropsy corroborated the belief that this poison attacks the kidneys, liver and lungs. The severe hemorrhagic pulmonary edema was regarded by the author as the principal cause of this patient's death. Acute hepatic insufficiency and toxic nephrosis were considered to be contributory factors. The author's analysis of the cases that have been reported in the literature indicates that there is a greater percentage of renal symptoms in cases of poisoning due to inhalation. After carbon tetrachloride has been ingested, the concentration of this substance will be greater in the portal circulation, and, as a consequence, hepatic involvement will predominate.

Ugeskrift for Laeger, Copenhagen

113:473-510 (April 19) 1951. **Partial Index**

*Fluid Therapy: Review. B. Friis-Hansen.—p. 473.
Intoxication with Local Anesthetics. M. Andersen.—p. 489.
Accidental Intraarterial Injection as Complication in Intravenous Anesthesia. K. D. Carlsen.—p. 492.
Allergic Rhinitis on Basis of Focal Infection. E. Strandbygård.—p. 493.

Fluid Therapy.—Friis-Hansen discusses the composition of extracellular and intracellular fluid under normal conditions and the shifting in the fluid and salt metabolism that occurs in different diseases, together with the development of rational fluid therapy based on these relations. Possible shock in a dehydrated patient is treated with blood or plasma transfusions. An initial dehydration is undertaken with a combination of salt solution (0.9% sodium chloride) and 5% glucose, corresponding to about half of the fluid quantity the patient is believed to need, preferably given intravenously. Possible acidosis or alkalosis is corrected with sodium bicarbonate or salt solution. Continued rehydration is carried out with salt solution, glucose salt solution or Darrow's fluid in more chronic forms of dehydration. Darrow's fluid is given subcutaneously or slowly intravenously. Maintenance therapy covers the daily need of water and electrolytes with salt solution, Darrow's fluid, and 5 or 10% glucose as a calory source. Electrolyte and glucose solutions can advantageously be combined when given intravenously, making the calory administration more continuous. With parenteral fluid therapy of longer duration, vitamins B, C, and possibly K are added to the infusion fluids. The many pulmonary edemas that have occurred from overdosage of salt solution or sodium bicarbonate emphasize the need of caution; it is better to give too little than too much. As soon as possible the patient should take his fluids by mouth.

113:549-584 (May 3) 1951. **Partial Index**

Diagnosis and Treatment of Cancer of Colon. K. Lehmann.—p. 549.
*Cancer of Pancreas: Possibility of Early Diagnosis and Radical Surgical Treatment. H. Brocks, A. P. Gammelgaard and E. H. Larsen.—p. 553.
Cancer and Estrogenic Therapy. J. Christiansen.—p. 563.

Cancer of Pancreas: Early Diagnosis and Radical Surgery.—On the basis of 170 cases of cancer of the pancreas in 97 men and 73 women, verified at operation or necropsy or both, Brocks and his associates point to the difficulty of making a diagnosis early enough to allow radical operation. They say that in the age group 50 to 70 cancer of the pancreas should be more frequently borne in mind, especially in the case of unexplained abdominal pain. Careful roentgen examination of the stomach and duodenum is advised. Determination of the serum lipase and the serum amylase may be of value. If cancer of the pancreas is suspected, exploratory laparotomy should be done as soon as possible. Jaundice and, particularly, pain are the more frequent introductory symptoms; loss of weight and dyspeptic symptoms follow. In two-thirds of the cases the tumor was localized to the head of the pancreas. None of the palliative operations has prolonged life or notably eased the patient's distress. It is thought that radical operation might possibly have been done in 21 (10%) of the cases.

113:623-654 (May 17) 1951. **Partial Index**

*Streptomycin Treatment of Tuberculous Meningitis and Miliary Tuberculosis. H. C. A. Lassen and F. Neukirch.—p. 623.
Establishment of Tubercle Bacilli in Seminal Fluid. T. Hølund.—p. 632.
Effectiveness of Antimycotic Treatment of Athlete's Foot. P. V. Marcussen.—p. 633.

Streptomycin Treatment of Tuberculous Meningitis and Miliary Tuberculosis.—Fifty patients with disseminated tuberculosis were treated with streptomycin. The average observation time for all surviving patients was 28 months. Lassen and Neukirch say that recovery resulted in four of the six patients with miliary tuberculosis only, in 11 of the 32 with tuberculous meningitis, and in two of the 12 with both tuberculous meningitis and miliary tuberculosis. Of 20 patients with tuberculous meningitis given only intramuscular streptomycin treatment, seven recovered; of 12 treated both intrathecally and intramuscularly, four recovered. The one patient with both tuberculous meningitis and miliary tuberculosis who received streptomycin intrathecally and intramuscularly died. The results of exclusively intramuscular treatment with streptomycin in this series were thus as good as those of intrathecal and intramuscular treatment. The prognosis is most unfavorable in combined tuberculous meningitis and miliary tuberculosis. In the surviving patients the vestibular function was destroyed; the three adults but not the children were noticeably troubled by dizziness. Calmette vaccination had not been done in any of the patients. No case of disseminated tuberculosis has been seen in the Copenhagen tuberculosis station in persons in whom Calmette vaccination was done and followed by positive tuberculin reaction. Thus, it would appear that Calmette vaccination of all tuberculin-negative persons would prevent the occurrence of tuberculous meningitis and miliary tuberculosis.

Union Médicale du Canada, Montreal

80:657-774 (June) 1951. **Partial Index**

*Surgical Treatment of Mitral Stenosis: Its Indications and Results. E. D. Gagnon and P. David.—p. 660.
Modern Lighting and Ocular Pathology. E. Blain.—p. 675.
Treatment of Tuberculous Meningitis with Streptomycin. J. L. Desrochers.—p. 677.

Commissurotomy for Mitral Stenosis.—The authors have modified the Glover, Bailey, and O'Neill commissurotomy technique by inserting the blade of the commissurotomy guillotine knife between the right hand glove and a second glove finger worn on the index finger. This technique was used on five men and two women, between the ages of 17 and 28, with buttonhole mitral stenosis. Two patients died, one within 48 hours after the intervention and the other on the fifth postoperative day. In the first the post-mortem examination revealed that the median incision had been made somewhat anterior to the commissure, producing a possibly too pronounced mitral insufficiency, for which the left ventricle was unable to compensate. In the second case the incisions were made just at the axis of the commissures, and the cause of death could not be satisfactorily elucidated. It is too early for evaluation of late functional results of the commissurotomy in the five surviving patients, but the authors were impressed by the pronounced improvement of the condition of two of the patients who had been followed up for 13 and 12 months respectively after the intervention. Both are able to do work adapted to their cardiac capacity. Early results in the three other patients who survived the operation are promising. The presence of rheumatic activity or of involvement of other valves, particularly the aortic valve, constitutes a definite contraindication to the operation. Mitral insufficiency was associated with the stenosis in two of the authors' patients, but in only one of them was the result of the operation unsatisfactory. Thus the indication for operation in cases of this type remains debatable. Calcification of the mitral leaves does not constitute a contraindication to the intervention. It seems advisable to perform commissurotomy as early as possible, when the first signs of pulmonary congestion are manifested and before the occurrence of permanent changes in the parenchyma and particularly in the pulmonary vessels. Severe hemoptysis does not constitute a contraindication to commissurotomy, but an attempt should be made to restore cardiac compensation before the intervention. Auricular fibrillation is not a definite contraindication, but its occurrence warns of the possibility of a thrombus in the auricular appendage. Despite the need for improvement of the technique, commissurotomy is the only method of treatment by which encouraging results may be obtained at present in a large number of cases of mitral stenosis.

BOOK REVIEWS

Growth and Development of Children. By Ernest H. Watson, M.D., Associate Professor and George H. Lowrey, M.D., Instructor, Department of Pediatrics and Communicable Diseases, University of Michigan Medical School, Ann Arbor. Cloth. $5.75. Pp. 260, with 54 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1951.

Here is a most practical and useful book for those concerned with the care of children. Originally started as a manual of factual data, it has been expanded through the comments and additions of its users at Ann Arbor, as well as authorities elsewhere in this field, to consist of a small book, remarkable for its condensed, orderly presentation of up-to-date knowledge of the physical and mental development of children. The subject coverage extends from a consideration of prenatal influences on the organism to include all potential influencing factors to the time of adolescence. The growth of various organ systems is traced in categorical fashion, making reference facts readily accessible by frequently used outline format and an abundance of charts and graphs. In some instances, the abnormal variations of development are considered, with charts showing the possible etiological factors and the studies needed for clinical differentiation.

As is so welcome in a handy reference book, little discussion is made. The facts are readily found and are supported by a well-selected bibliography following each section, which permits the reader to pursue more thoroughly any point of interest. With much of its presentation in the popular outline-tabular form, this book is unique in its subject field. It is complete in its coverage of the subject, although necessarily brief, and can be recommended highly for use by those new to, or even experienced in, the field of pediatrics.

Research in Medical Science. Edited by David E. Green, Ph.D., and W. Eugene Knox, M.D. Cloth. $6.50. Pp. 492, with 15 illustrations. The Macmillan Company, 60 5th Ave., New York 11, 1950.

The various chapters in this book were written by authorities in particular fields of medical research. Thus, as the editors point out in their introduction, the general subject is not treated in a well-integrated or orthodox fashion, and not all aspects of research in medical science are covered. Chapters are devoted to such topics as the methodology of medical genetics and biochemical problems in sanitary engineering, as well as to the general subjects of viruses, chemotherapy, and neurology. The style of presentation of the contributing authors lacks uniformity, but one finds this seeming defect somewhat refreshing rather than distressing. In general, an attempt was made to survey the methods and problems as well as the recent accomplishments in particular fields of medical research and to discuss them in terms that could be easily understood by the nonspecialist. Indeed, the well-informed layman would find much of the book to be completely intelligible. It should be especially worth-while and interesting reading for those clinicians, basic scientists, and medical students who may not have a full appreciation of the increasingly close relationship of clinical research to the fundamental sciences.

On the Nightmare. By Ernest Jones, M.D., Second Edition. Cloth. $4.95. Pp. 374. Liveright Publishing Corporation, 386 4th Ave., New York 16, 1951.

The author attempts a definitive study of the nightmare, introducing evidence from psychiatry, history, literature, and mythology. As a result of these investigations, he has evolved a theory that concerns the relationship between religion and the burden of guilt that everyone supposedly inherits from a primordial conflict arising from repressed incestuous wishes. Phenomena of the nightmare are considered to be due to the invocation, by all peoples and all faiths through the ages, of mythological creatures, such as werewolves, vampires, incubi and succubi, devils, and witches, as projections of guilt. The author cites two essential attributes of the nightmare: 1. It arises from within. 2. It is of mental origin, a sexual wish in a state of repression. In this respect, the nightmare supposedly differs from ordinary erotic dreams only in that the erotic wish has been repressed. He concludes that if the wish were not repressed, fear would not be associated with the dream.

The book is presented in four parts. The author states that much of parts 1 and 2 has previously appeared in the English and German literature. In revising these for this book, he has rearranged the material presented and added confirmatory material from his own professional experience.

Destructive and Useful Insects: Their Habits and Control. By C. L. Metcalf, M.A., D.Sc., and W. P. Flint. Revised by R. L. Metcalf, M.A., Ph.D., Associate Entomologist, University of California College of Agriculture, Riverside, California. Third edition. Cloth. $10. Pp. 1071, with 584 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

This book has been widely accepted as a standard reference on economic entomology. The first 10 chapters are devoted to the fundamentals of technical entomology, while the remaining 13 chapters are given over to the major crop insects in the United States and southern Canada. A table or key to help the reader identify a particular pest, when the plant or animal attacked is known, introduces each chapter in the latter part of the book. The discussions of the various pests include statements on the recognition marks and types of injury, life history, and significant habits, and the control measures believed to be effective.

The vast number of changes that have occurred in insect control during the past decade have been largely incorporated into the present edition. This has necessitated the revising of several sections to include recent knowledge on insect biochemistry and physiology and a revising of information on diseases transmitted by insects. New sections have been added on insect nutrition and pigmentation, new chemicals, and methods of application, improved formulations, insecticide-resistant insects, and current control practices. The subject matter is comprehensively covered in a clear and direct manner. This book is to be recommended as a useful reference manual for entomologists, farmers, gardeners, physicians, pest control operators, and general readers who desire practical information on insect pests, their habits, and their control.

Handbook of Diagnosis & Treatment of Venereal Diseases. By A. E. W. McLachlan, M.B., Ch.B., D.P.H., Consultant in Venereal Diseases, Bristol Clinical Area, Bristol. Fourth edition. Cloth. $4.50. Pp. 368, with 160 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1951.

Events have developed so rapidly in the treatment of venereal diseases, particularly in this country, that nothing so static as a book can keep altogether current with the times. Although it makes a valiant effort to do so, this book falls short in some respects. The author is fully aware of the growing tendency in the United States to rely on penicillin alone for the treatment of syphilis, and he recognizes also the place of the newer antibiotics for the treatment of other venereal diseases. It is apparent, however, that experience in Great Britain with these drugs lags somewhat behind that in this country, and, as a result, the author still relies on combined treatment with antibiotics and the heavy metals for syphilis. Aside from the field of treatment, this little book is excellent. It is well written, adequately illustrated and indexed, and there are clear descriptions of such subjects as diagnosis, laboratory-findings, clinical picture, and differential diagnosis.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Enterobacteriaceae: Collected Studies on Salmonella, Arizona, Ballerup-Bethesda, Escherichia, Alkalescens-Dispar, Klebsiella, Shigella, Providence and Proteus. By F. Kauffmann, M.D., Chief, International Salmonella and Escherichia Centre, Statens Seruminstitut, Copenhagen. Cloth. $7.50; 50 schillings. Pp. 338. Ejnar Munksgaards Forlag, Nørregade 6, Copenhagen, K, 1951.

Dr. Kauffmann has been known to American laboratory workers for more than 20 years because of his extensive studies of salmonellas. Many of these were carried out in cooperation with Dr. P. R. Edwards of the United States Public Health Service, to whom this book is dedicated.

The volume contains a collection of valuable data scattered in periodicals on Enterobacteriaceae, among which many genera are of medical interest. Salmonellas (including the typhoid bacillus) occupy the first and best part of the book. Bacteria maintaining a position between salmonellas and colon-aerogenes organisms have been called paracolon bacilli for a long time. They appear in this volume as the Arizona, Ballerup, and Bethesda groups, which, however, do not include all paracolons. The clinical pathologist still will not know how to label a slow lactose-fermenting Enterobacteriacea which forms indol. Further chapters on Escherichia and Klebsiella further increase practical dilemmas. The Friedländer bacillus (Klebsiella pneumoniae) has been classified with aerobacters during recent years, a concept which is acceptable by the bacteriologic taxonomist but difficult for the medical practitioner to understand, who has to receive an explanatory note from the medical laboratory: "Klebsiella isolated from the urine" or "Aerobacter isolated from the sputum." While the occurrence of aberrant strains is shown in the text, the table demonstrating biochemical group diagnosis on page 16 flatly states that Escherichias do not form hydrogen sulfide and are motile, while Klebsiellas are not motile. Daily practical experience, especially in the United States, does not allow such generalizations. One has to wonder why the pioneer work of Levine, Winslow and co-workers, Parr, Stuart and co-workers, and others should fall now into oblivion. The author refutes the classification of Shigella alkalescens with the genus Shigella and puts this organism, together with Shigella dispar, into a special group between Escherichia and Klebsiella. This is justified by the serologic relationship of Sh. alkalescens and Sh. dispar to some Escherichia coli strains but not from the point of view of the medical bacteriologist. The following chapter, on shigellae, constitutes an excellent part of the book, especially the comparison of the confusing nomenclatures. The pages devoted to the Providence group include a review of organisms standing between paracolons and protei. The chapter on protei suggests the unification of Pr. vulgaris and Pr. mirabilis (ammoniae) under the name of Pr. hauseri. Again one would like to see more emphasis on biochemical characteristics of the species. The following pages are devoted to the reciprocal antigenic relationships and the final chapter lists a number of mediums useful for the isolation of Enterobacteriaceae. While the list contains the obsolete Drigalski plate, one misses MacConkey's and Levine's very popular mediums. A list of references in alphabetic order ends the book. There are many additional quotations in the text, marked with index numbers; some of them are found in the particular chapters, and others are entirely missing.

This book contains a wealth of material, based chiefly on the observations of Kauffmann, Edwards, Stuart, and Wheeler and their co-workers. It is a valuable source book for the bacteriologist who is specializing in Enterobacteriaceae. Since biochemical properties of the organisms, which form the base of their classification in routine laboratory work, are treated as secondary characteristics and medical, veterinary, or sanitary aspects are neglected, one cannot recommend this volume as a laboratory aid for a nonspecialized institute. It should be, however, read by those interested in this field of bacteriology.

While the work of Dr. Kauffmann is most laudable and important, one must accept this book also as a memento showing the increasing necessity of practical medical bacteriologists and clinical pathologists taking a firmer stand in the question of naming, renaming, classifying, and reclassifying bacteria of medical importance.

Letters of Benjamin Rush. Volume I: 1761-1792. Volume II: 1793-1813. Edited by L. H. Butterfield. Published for American Philosophical Society. Memoirs of American Philosophical Society Held at Philadelphia for Promoting Useful Knowledge, Volume 30, Part I. Cloth. $15 per set. Pp. 624; 627-1295, with illustrations. Princeton University Press, Princeton, N. J.; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, 1951.

Benjamin Rush probably was the 18th century's most distinguished American physician. He was also a politician, social reformer, psychiatrist, church founder, college founder, and pamphleteer. He was one of the signers of the Declaration of Independence. These excellent volumes contain a collection of more than 650 letters written by Rush, many of which were never before printed. His correspondents included five Presidents of the United States, Benjamin Franklin, leading figures in science, members of his family, including his mother-in-law, and friends. Rush's fame sprang from his vigorous and magnetic personality, from his accomplishments in medicine, education, and social reform, from his work as a teacher and lecturer, and from his letter-writing. He preferred writing letters to eating; in fact, he once suggested that eating clubs should be prohibited. He stored up everything he saw, read, or heard about that might prove useful to someone, and he talked and wrote for the relief of his mind. Rush's letters were marked by an indiscretion that was relished by his correspondents. His correspondence with John Adams is especially extensive and interesting. The editor of these volumes, L. H. Butterfield, of Princeton, says "to the deepest and finest of all of Rush's friendships, that of John Adams, this collection is a monument." Rush's letters written to his wife, his children, his patients, and others during the great epidemic of yellow fever in Philadelphia about 1762 are of great interest, particularly with reference to the treatment of a disease of which the cause was then unknown. While these letters are of special interest to physicians, they can be read with profit by others interested in the early history of the United States.

Social Pathology: A Systematic Approach to the Theory of Sociopathic Behavior. By Edwin M. Lemert. Cloth. $4.50. Pp. 459, with illustrations. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

This book, written by a professor of sociology, deals in general with aberrations or deviations from normalcy in human society, such as crime and prostitution or other "pathological phenomena" or maladjustments in social behavior. This clearly shows that the term "pathology" is borrowed from medicine and applied to sociology, and therefore social pathology in this sociological sense differs from the strict medical usage of the term, where social pathology means the relation between genuine disease (e. g., tuberculosis, cancer, venereal diseases, or rheumatic fever) and social-environmental conditions. This latter interpretation of social pathology, or the social etiology of diseases and their varying prevalence in different social groups, as is shown by medical statistics, forms the theoretical foundation of social medicine. As a medical discipline in its own right, social pathology has found special representation nowadays in England through a number of academic chairs (as at Oxford, Edinburgh, Birmingham, and Sheffield), occupied by clinicians and public health workers, after similar developments some decades earlier in the German-speaking and French-speaking countries.

With this new medical discipline as a systematic quantitative investigation into the social relations of all diseases, Lemert's social pathology has little in common. However, certain chapters in the borderline area between social science and medical science, such as Blindness and the Blind, Speech Defects and the Speech Defective, and Drunkenness and the Chronic Alcoholic, which are more or less documented by statistics and show the deviation from normal behavior, have beyond doubt great medical interest; other chapters, such as Prostitution and the Prostitute, Crime and the Criminal, also deserve medical attention, because of their close connection with medicolegal and social problems, while the chapter Radicalism and Radicals, enters political sociology, showing the differentiation of radical

groups from the average "normal" population. Thus, from a broader point of view, this new book, with its pertinent footnotes and references, an outline of case history studies, and a glossary of terms in the appendix will find interested readers also in the medical profession, though the underlying theory as expounded in several chapters in Part 1 of the book may require special familiarity with sociological concepts. Among these the chapter on deviation and differentiation in society shows that the author is well aware that establishing or describing norms or normal behavior is more difficult in societal reactions or sociological characteristics of groups than in the biological traits of these groups.

Enzymes and Enzyme Systems: Their State in Nature. Edited by John T. Edsall. With contributions by A. L. Lehninger, and others. Cloth. $2.75. Pp. 146, with illustrations. Harvard University Press, Cambridge 38, Massachusetts, 1951.

To this first volume of memoirs from Harvard University's Laboratory of Physical Chemistry Related to Medicine and Public Health, eight experts contribute chapters on various aspects of the physical chemistry of enzymes. The work grew out of a symposium held in July, 1949, and is intended to stimulate interest in the field and further research rather than to serve as a definitive monograph.

Lehninger and Green have chapters on the behavior of enzymes in mitochrondia; Emil Smith writes of the role of metals in the action of enzymes; Maehly describes the splitting of peroxidase and its resynthesis from the split products; Chance discusses the thermodynamics of some heme enzymes; and, in the last chapter, Cohn, Surgenor, and Hunter consider the state in nature of proteins and protein enzymes of blood and liver. The printing and binding are worthy of a university press.

The Polarographic Method of Analysis. By Otto H. Müller, Associate Professor of Physiology, State University of New York Medical Center at Syracuse, Syracuse, N. Y. Contributors to Chemical Education, No. 2. Second edition. Cloth. $3.50. Pp. 209, with 51 illustrations. Chemical Education Publishing Co., Easton, Pa., 1951.

This book was written to present the subject of polarography in such a manner that it would be of practical value for students and teachers in physical chemistry and also serve for advanced specialized study in analytical chemistry.

The first chapter discusses the various electro-methods available for analysis. The remaining seven chapters give details concerning the apparatus used, discuss the fundamentals of qualitative and quantitative polarography, consider the recent developments and the possible applications of this electro-analytical method of analysis, and include some valuable suggestions for practical polarography. The volume contains 26 experiments, which are designed to illustrate the various ideas discussed. A brief bibliography and an index are also included.

Bentley and Driver's Text-Book of Pharmaceutical Chemistry. Revised by John Edmund Driver, M.A., Ph.D., M.Sc., Professor of Chemistry in University of Hong Kong. Fifth edition. Cloth. $7.25. Pp. 671, with 50 illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E.C.4, 1951.

This edition of this well-known and excellent British textbook has been rewritten to make it accord with the 1948 edition of the British Pharmacopoeia. Because it is confined to B. P. products, British methods of manufacture, and the requirements of British students of pharmacy, it will have little use outside of the British Empire.

Hypertension: A Symposium Held at the University of Minnesota on September 18, 19, and 20, 1950, in Honor of Elexious T. Bell, M.D., Benjamin J. Clawson, M.D., and George E. Fahr, M.D. Edited by E. T. Bell, M.D. Cloth. $7.50. Pp. 573, with illustrations. University of Minnesota Press, Minneapolis 14, 1951.

This book consists of a collection of current reviews of clinical and experimental studies of hypertension by 25 leading clinicians and investigators in this field. The 35 manuscripts and the several sections of discussions, questions, and answers were collected as a result of a three-day symposium. The papers summarize well many aspects of the etiology, pathology, clinical course, and treatment of this disease. No effort is made to summarize the several studies or to outline classification and therapy. The bibliography affords excellent reference to many early and recent publications. The accumulated current studies and opinions of the essayists afford good orientation reading and stimulus for study to those investigating hypertension.

A Primer for Psychotherapists. By Kenneth Mark Colby, M.D., Adjunct in Psychiatry, Mount Zion Hospital, San Francisco. Cloth. $3. Pp. 167. Ronald Press Company, 15 E. 26th St., New York 10, 1951.

This volume is intended to present, in simple form, elementary principles of psychotherapy for use of beginners in this field, particularly interns, residents in psychiatric hospitals and clinics, clinical psychologists, and psychiatric social workers. Psychotherapy is presented not as an exact science but as a practical art, in which general principles of scientific derivation are interpreted in accordance with the judgment of the individual therapist as they apply to each patient. The greater part of the book is concentrated on therapy of the neuroses, but there is a chapter on the specific differences in the approach to neurotic and schizophrenic patients. The material throughout is illustrated by quotations from actual case reports.

The American Illustrated Medical Dictionary: A Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology and Medical Biography with Their Pronunciation, Derivation and Definition. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., Lieutenant-Colonel, M.R.C., U.S. Army. Editorial Board: Richard M. Hewitt, A.M., M.D., E. C. L. Miller, M.D. Arthur H. Sanford, M.A., M.D. Contributors: Lloyd W. Daly, A.M., Ph.D., Associate Professor of Classical Studies, University of Pennsylvania, Philadelphia, and Austin Smith, C.M., M.D., Editor, Journal of the American Medical Association, Chicago. Twenty-second edition. Cloth. $10. Pp. 1736, with 720 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1951.

Each edition of this great medical dictionary extends its wide reputation. This edition has thousands of new terms that have been added to medical language and many new illustrations. The new typography makes it more readable. Other new features are a table of modern drugs and dosage and an article on fundamentals of medical etymology, which was prepared by Prof. Lloyd Daly, of the University of Pennsylvania. This edition appeared during the celebration of the semicentennial of this medical dictionary. The publishers are to be congratulated.

Adventure in Mental Health: Psychiatric Social Work with the Armed Forces in World War II. A Symposium by Betty P. Broadhurst and others. Edited by Henry S. Maas. Cloth. $4.50. Pp. 334. Columbia University Press, 2960 Broadway, New York 27, 1951.

Contributors to this symposium are 16 social service workers, who give details of their work with the armed forces in World War II. The book is in the nature of a report on what has been referred to as a significant period in the development and especially the recognition of psychiatric social work. The book has three sections: the first deals with psychiatric social work in the field, the second is headed "upper echelon story," and the third presents implications for current civilian practice. Numerous case histories accompany the discussions in the first section. One appendix presents an outline of a mental hygiene unit for a replacement training center; another outlines treatment and training programs for psychiatry units. Social workers in this field undoubtedly will find the volume helpful.

A Few Buttons Missing: The Case Book of a Psychiatrist. By James T. Fisher, M.D., and Lowell S. Hawley. Cloth. $3.50. Pp. 282. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5, 1951.

This book is an informal presentation of the life and problems of a psychiatrist in 50 years of psychiatric practice. The book appears to have been written primarily for the laity in an attempt to divorce psychiatry from the aura of confusion and mysticism that it bears in the thinking of the average man.

The authors have illustrated their chapters throughout with selected anecdotes of a humorous and instructive nature, taken from actual patient experiences. Most of the material presented is autobiographical, concerning the personal experiences of one of the authors, Dr. Fisher, who graduated from Harvard in 1886 and entered practice in Los Angeles in 1904. Earlier, he had studied psychiatry in many of the capital cities of Europe during the developmental period of Freudian psychoanalysis.

QUERIES AND MINOR NOTES

IDIOPATHIC HYPERLIPEMIA

TO THE EDITOR:—*A young man, 19, was admitted to the hospital four weeks after receiving a smallpox vaccination on the left arm. A necrotic ulcer, 1 cm. deep and 3 cm. in diameter, surrounded by an area of inflammation and accompanied by axillary lymphadenopathy, was noted. Clotting of a specimen of blood revealed serum that had the appearance of milk. The specimen, on standing for 24 hours, showed a layer, about 0.5 cm. thick, of milky substance overlaying clear serum. Chemical analysis (fasting specimen) revealed on two occasions, one month apart, total lipids in excess of 4,000 mg. per 100 cc. The total cholesterol on both occasions was between 450 and 500 mg. per 100 cc. The total protein on admission was 9.7 gm., with reversal of the albumin-globulin ratio. These findings reverted to normal over a period of two weeks as the inflammatory process subsided under antibiotic therapy. Repeated physical examinations and urinary and hematologic studies have revealed no abnormalities. There is no evidence of lipemia retinalis. It is now two months since the patient was discharged from the hospital as clinically well. Weekly examinations of serum, however, reveal no gross change in its milky appearance. This patient was inducted into the service about two months before his admission to the hospital, at which time a routine serologic study was done. It is assumed, therefore, that he did not have lipemia when he entered the service. What is the etiology, mechanism, and prognosis?*

M.D., Texas.

This inquiry was referred to two authorities, whose respective replies follow.—ED.

ANSWER.—The etiology of "diseases of abnormal lipid metabolism" is not well understood. Most are regarded as due to defects in the latter phases of lipid assimilation and storage with consequent excessive accumulation of lipids carried through earlier normal steps of the lipid metabolic cycle. In many instances, blood fat studies of a patient's family disclose cases of previously unsuspected and apparently symptom-free hyperlipemia. Adults with hyperlipemia may be divided into two groups prognostically: 1. Apparently symptom-free patients, without evidence of internal organ involvement but frequently with evidence of local skin deposits (xanthomas). The disease seems to follow a benign and chronic course, with little or no change over a period of years. 2. Patients with evidence of endocrinopathies or other metabolic disorders, such as hepatic disease, pancreatic disease, renal disease, diabetes mellitus, and hypothyroidism. This group has a more limited prognosis, but many have a history of skin lesions for many years, suggesting pre-existing hyperlipemia of many years' duration. It is uncertain, in these latter cases, whether the associated condition is due to the hyperlipemia, to an independent disease, or to both.

From the description given, the case under discussion is one of essential hyperlipemia and merits a good prognosis. That hyperlipemia was absent two months earlier is only an assumption. Trauma has been thought by the dermatologists to favor appearance of xanthomas in the area of insult. In some cases, acute infections have preceded recognition of the disease.

References:

Thannhauser, S. J.: Serum Lipids and Their Value in Diagnosis, New England J. Med. **237**: 515 (Oct. 2) 1947; **237**: 546 (Oct. 9) 1947.

Thannhauser, S. J.: "Lipidosis: Diseases of the Cellular Lipid Metabolism," pp. 257-287, Oxford University Press, 1950.

ANSWER.—This young man has hyperlipemia of the type described by Thannhauser as "idiopathic hyperlipemia of adults with and without secondary eruptive xanthomas and occasionally accompanied by slight glycosuria." Apparently secondary hyperlipemia occurring after smallpox vaccination has not been reported in the literature. Since the patient is physically healthy, it may be assumed that he has primary, not secondary, idiopathic hyperlipemia.

It is assumed that, at the service induction two months prior to hospital examination, the hyperlipemia was overlooked. The mechanism of idiopathic hyperlipemia is similar in its mechanism to prolonged postprandial hyperlipemia. Fat is correctly absorbed but does not go out through the capillaries, to the places of metabolism at a normal rate. Therefore, the name "retention hyperlipemia" was coined for this condition. The prognosis is very good. These patients are not inclined to have premature arteriosclerosis. They react promptly to a low-fat, low-caloric diet, for example, 1,200 calories with 20 to 30 gm. of fat.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

CHOLINE AND INOSITOL IN FAT METABOLISM

TO THE EDITOR:—*May I have information on the best form of choline and inositol medication in disturbance of the fat metabolism and fatty liver degeneration? Please suggest special products or combination of products and their doses for adults. Could their continued use be harmful?*

M.D., New Jersey.

ANSWER.—Choline and inositol medication is very questionable in its therapeutic effect in fatty livers as well as in fat metabolism in humans. The experiments of Best and co-workers were conducted on rats with deficiency disease and fatty livers. The effects of choline on rats are apparently different from those on humans. It should not be assumed that favorable effects upon the fatty livers of choline-deficient rats can be expected in the same way in humans with fatty livers of various etiologies. A clear-cut effect of choline and inositol, or so-called lipotropic substances, in humans has not been reliably elicited. For this reason, the question of which product, or combination of products, is advisable cannot be answered. That these substances are harmful, apparently has not been reported. However, their usefulness is very much doubted except in very rare deficiency diseases.

AZOOSPERMIA

TO THE EDITOR:—*What treatment would you follow with this patient? He is 26 years old, and has never had any remarkable illness. Examination reveals him to be normal except that the testes are probably a little smaller than normal. He has normal libido and normal sex function. Repeated examination of the ejaculatory fluid reveals no spermatozoa.*

M.D., Virginia.

ANSWER.—Azoospermia may be due either to nonproduction of spermatozoa in the testicles or to a blockade somewhere in the duct system, most often in the epididymides. The first step in differential diagnosis should be a testicular biopsy. If normal spermatogenesis is present, the diagnosis of a blockade becomes obvious. One then examines the epididymides to see whether there is a region that contains spermatozoa. The patency of the ductus deferens may be investigated by injection or probing. While the results of epididymovasostomy are often disappointing, there is everything to gain and little to lose by trying this operation in suitable cases.

On the other hand, a biopsy may show that the seminiferous tubules are not functioning. If the germinal epithelium appears normal, treatment should consist principally of systematic regulation of hygiene and the administration of thyroid in dosage sufficient to maintain the basal metabolic rate at about + 10. Other endocrine therapy is of doubtful value, but gonadotropins might be tried empirically. If the seminiferous tubules prove to be hypoplastic, degenerated or atrophied, no treatment will help the patient.

LATENT SYPHILIS

To the Editor:—*A farmer in his early thirties came to me because of sharp sticking pains in the chest. Aside from the usual diseases and injuries of childhood and an appendectomy at age 24, a history of syphilis was discovered through a routine blood test in 1942. He had no knowledge of a primary sore and states that the physician at that time raised the question of congenital syphilis. He was given alternating courses of neoarsphenamine and bismuth continuously from March 1942 until April 1, 1944, but the Wassermann reaction has remained definitely positive. The titer of a blood specimen taken a few days ago showed a reaction of 1:16. He is married and has two healthy children. The wife's Wassermann reaction is negative. The electrocardiogram and x-ray and fluoroscopic examination of the heart reveal no definite variations from normal. Please suggest any further examinations that should be made. Should he receive antisyphilitic treatment?*

Ray S. Wycoff, M.D., Lexington, Neb.

Answer.—The diagnosis of congenital syphilis in the young farmer in question would rest, first, on the presence or absence of lesions or stigmas of the congenital disease in himself and second, on an epidemiologic investigation of his parents and siblings. In any case in which there is a reasonable suspicion of congenital syphilis, such an epidemiologic study should be carried out. It does not appear that the patient's spinal fluid has as yet been tested. This is obligatory in all patients with syphilis. The laboratory examination should include a cell count, performed within one hour after the lumbar puncture, quantitative protein determination, quantitatively titered complement fixation test and colloidal test. If the spinal fluid is abnormal, the patient certainly needs more treatment. If it is negative, the question of additional treatment is largely a matter of psychotherapy.

The treatment of latent syphilis is entirely preventive and prophylactic. The amount of treatment necessary cannot be judged by the response of the blood serologic test which, in patients whose treatment is begun late in the course of the infection, usually remains positive. Both the patient and the physician should understand the significance of seroresistance, and both are advised to read Moore's "Seroresistance (Wassermann-Fastness) in Syphilis: A Discussion for the Patient" (*Am. J. Syph., Gonor. & Ven. Dis.* **30**:125 [March] 1946).

Assuming the patient's spinal fluid to be abnormal, he should then receive 6,000,000 to 10,000,000 units of penicillin, which may be given as procaine penicillin in oil with 2 per cent aluminum monostearate, 600,000 units every second or third day, to the total indicated.

If the spinal fluid is normal, there is little or no point in the administration of penicillin unless, as suggested above, for psychotherapeutic purposes.

With regard to the sharp sticking pains in the patient's chest, it would seem desirable to obtain a roentgenogram of the cervical spine in the lateral position and in flexion and extension, since a ruptured intervertebral cervical disk may cause symptoms of this sort.

RETROLENTAL FIBROPLASIA

To the Editor:—*I have to present a discussion of retrolental fibroplasia soon, and there are some points that I have not been able to clarify in the literature. Is it still felt that the administration of iron and the water-soluble vitamins may play some role in the inception of this process? Has not the use of vitamin E been abandoned? Is Terry's opinion that early exposure to light may be significant still held? Is there any explanation of why full-term infants usually or always have unilateral involvement, while premature infants have bilateral involvement?*

Carl H. Weatherly, M.D., Louisville, Ky.

Answer.—The etiology of retrolental fibroplasia remains completely obscure. The one significant positive fact of etiologic significance is its association with prematurity. None of the clinical observations that have purported to associate retrolental fibroplasia with specific nutrients has been adequately controlled. Recent experience has shown that the incidence of this condition may undergo sudden unexplained change. During the past year, for example, retrolental fibroplasia has become very rare in Chicago, where it had been fairly common previously. In New York City, on the other hand, there has been a great increase. It is obvious, therefore, that any clinical experiment designed to evaluate possible etiologic or therapeutic factors must be carefully controlled, preferably with alternate cases. Such an experiment has not yet been reported. Kinsey and Zacharias (*J. A. M. A.* **139**:572-578 [Feb. 26] 1949) correlated the supplementation of the premature infant's diet with vitamin A and iron with an increase in incidence of retrolental fibroplasia, but adequate controls for this observation were lacking, and its etiologic significance has not received general acceptance. The claim that vitamin E could prevent the development of retrolental fibroplasia has also had to be abandoned, although Owens and Owens still maintain that it decreases the severity of the condition. The use of vitamin E was discontinued by Reese and Blodi (*Am. J. Ophth.* **34**:1-24, 1951) after their demonstration that the disease occurred with equal frequency in two series of unselected premature infants, one treated with vitamin E and the other untreated. Hepner, Krause, and Davis (*Pediatrics* **3**:824-828, 1949) concluded that early exposure to light is not an etiologic factor, since four of five infants whose eyes were bandaged at birth later developed retrolental fibroplasia. Their conclusion has been criticized, however, because the pathological changes did not develop until after the bandages were removed. The experiment is being repeated on a larger scale at the Columbia-Presbyterian Medical Center. The bilateral occurrence of retrolental fibroplasia in premature infants may be an indication of the systemic nature of the disorder. The unilateral disease that is observed in full-term infants is not related to retrolental fibroplasia, although it is frequently confused with it. This condition has been termed persistent hyperplastic vitreous (Reese: *Arch. Ophth.* **41**:527-549 [May] 1949).

HEADACHE, STOMACHACHE AND EMESIS

To the Editor:—*A girl, 7, with two younger siblings apparently of normal intelligence complains of frontal headaches and stomachache followed in 10 to 30 min. by vomiting after which she sleeps about a half hour and awakens feeling perfectly well. The attacks occur two or three times weekly, bear no relation to food ingested and may occur in the middle of the night. She has had this for about two years, has had no severe febrile illness and no birth trauma or other cephalic injury. Physical examination reveals a pale, blonde and slightly undernourished child about 2 in. (5.08 cm.) taller than average for her age. Results of other examinations, including neurological tests are normal, except that she has bilateral anterior cervical adenitis. Urinalysis, complete blood cell count and stool examinations are normal. Family history discloses no epilepsy, migraine or other encephalalgia but does reveal allergies on the mother's side. The child has been free of allergic manifestations. What would you include in the differential diagnosis?* *M.D., Illinois.*

Answer.—The following conditions should be included in the differential diagnosis: gastrointestinal allergy; epilepsy; emotional disturbances; errors of refraction; nasal sinusitis; increased intracranial pressure; migraine; urinary tract "colic" (due, for example, to stone or ureteral obstruction); intermittent gastrointestinal obstruction; indigestion (especially fats) with pylorospasm; and intestinal parasites.

The following procedures should be carried out if they have not already been included in the examination: skin tests for foods or, better, elimination diets; stool examination for parasites and, if there is mucus, for eosinophils; electroencephalograms for evidence of epilepsy and x-ray of skull and nasal sinuses; fundoscopic and refractive eye examination; intravenous pyelograms and gastrointestinal x-rays with contrast media; investigation of other behavior disturbances or maladjustments at home, school or play, and trial of a fat-free diet and soft curd milk.

REACTIONS TO PENICILLIN

TO THE EDITOR:—*Are sensitivity reactions more common following orally administered or parenterally administered penicillin?* *Ronald Germain, M.D., Albany, N. Y.*

ANSWER.—Sensitivity reactions of all types are much less common after orally administered penicillin than when the drug is given parenterally. In a series of over 500 patients with scarlet fever treated with between 450,000 and 1,200,000 units of penicillin daily by mouth for between seven and 10 days, only one reaction of hypersensitivity was observed. This was an instance of mild morbilliform eruption, which appeared on the seventh day of treatment and disappeared promptly and spontaneously. There have been seen no fevers or other sensitivity reactions with orally administered penicillin. The usual incidence of reactions when the antibiotic is given parenterally is about 2.5%.

ACID URINE

TO THE EDITOR:—*Is there anything better than ammonium chloride to convert alkaline urine to acid urine? What is the dosage of acid sodium phosphate to convert alkaline urine to acid urine?* *Joseph Halton, M.D., Sarasota, Fla.*

ANSWER:—Gram for gram, no neutral agent yields more acid in the body than ammonium chloride, since all the ammonium is converted to urea. If the kidney is capable of forming ammonium, some of this will reappear as ammonium salts in an acid urine, but the urea normally formed by the body provides most of the ammonium excreted in the urine. Chloride forms no urinary precipitate, while phosphates may do so. Phosphates also are retained by the kidney in uremia, while chloride is freely excreted. One gram of ammonium chloride has as much effect on urinary acidity as 2.5 Gm. of acid sodium phosphate. The maximal dose of acid phosphate is 4 Gm.; 2 Gm. three times a day is considered to be adequate to yield acid urine if the diet is not rich in fruit and vegetables. A meat diet leads to an acid urine, but, if urea-splitting bacteria are in the renal pelves and bladder, the maximal tolerable doses of ammonium chloride or phosphate may fail to neutralize the urine. The dosage of acidifying agents necessary to produce acid urine is dependent on diet and on the type of bacilluria.

PRISCOLINE® AND CEREBRAL SYNCOPE

TO THE EDITOR:—*What is the present status of the use of priscoline® (2-benzyl-2-imidazoline hydrochloride) early in cerebral syncope with complete hemiplegia in the presence of relatively clear sensorium and established hemorrhagic cerebrospinal fluid? Blood pressure, 180/130, presents no appreciable drop with the use of this sympathicolytic drug. A patient, 52, has hypertensive heart disease with minimal electrocardiograph deviations.*

C. D. J. Generales, M.D., New York.

ANSWER.—There is no reliable information on the effect of priscoline® on the cerebral circulation, and in any event it would seem contraindicated in the presence of intracranial hemorrhage.

VITAMIN E AND FERTILITY

TO THE EDITOR:—*What is the effect of tocophorex® (concentrated vitamin E) on the fertility in male and female? Is it harmful?* *M.D., New York.*

ANSWER.—Experiments on rats and other laboratory animals have demonstrated that a lack of vitamin E (alpha-tocopherol) may impair fertility in two ways. First, it causes degeneration of the seminiferous tubules. Second, in established pregnancies it leads to death and resorption of the embryos. Since this vitamin is widely distributed in common foodstuffs, the ordinary mixed human diet is almost certain to include adequate amounts. In theory, therefore, supplementary administration would have no value. In practice alpha-tocopherol, natural and synthetic, has been extensively tried in the management of sterility and habitual abortion. Early reports were encouraging, but larger clinical experience has raised considerable doubt about the utility of this treatment. At best vitamin E appears to be generally supportive rather than specifically corrective. There can be no harm in one's employing it as an accessory therapeutic item.

BLEEDING FROM THE NIPPLES

TO THE EDITOR:—*A 26 year old secundigravida, nullipara, now 6½ months pregnant, began to have bloody discharge from both nipples two weeks ago. She has had sore breasts before menses for 10 years. Fluid in which red blood cells can be seen microscopically can be expressed by gentle pressure on the breasts from at least four duct openings on one breast and five on the other. There are no palpable masses. Three Papanicolaou stains of both breasts at two day intervals were interpreted as "negative (atypical II, . . . possible adenoma?)" Does bleeding from the nipples ever occur from pregnancy alone? Does the statistical possibility of cancer increase or decrease in the presence of bleeding from multiple ducts? In this case is it preferable to delay therapy until pregnancy has terminated and watch for continued bleeding?*

Edward K. Strong, M.D., San Francisco.

ANSWER.—This patient probably has diffuse intraductal papillomatosis. Bleeding from the nipples does not occur from pregnancy alone. The statistical possibility of cancer decreases when bleeding is from multiple ducts. Bilateral simple mastectomy is unjustified. The patient should be carefully watched. If at any time a distended duct or a palpable mass becomes evident, it should be excised. If the bleeding continues, it can often be controlled by x-ray therapy (1,500 r to each breast in divided doses).

LUPUS ERYTHEMATOSUS

TO THE EDITOR:—*Will L. E. cells that have been described in cases of lupus erythematosus disappear during pituitary adrenocorticotropic hormone therapy?*

Ronald Germain, M.D., Albany, N. Y.

ANSWER.—Brunsting, Slocumb and Didcoct (*Arch. Dermat. & Syph.* **63**:29 [Jan.] 1951) in a report of seven cases stated: "A signal disappointment was the failure of Cortisone [and presumably pituitary adrenocorticotropic hormone (ACTH)] to abolish the Hargraves phenomenon in the bone marrow. . . . Occasionally so-called lupus erythematosus cells were not clear-cut, but always the specimens revealed signs of amorphous material as indications of a positive reaction." The plasma test of Haserick was not applied in Brunsting's cases. Haserick, however, reported (*A. M. A. Arch. Dermat. & Syph.* **63**:534 [April] 1951) the case of a woman with acute disseminated lupus erythematosus in whom the results of the lupus erythematosus test were negative on three occasions. The patient responded dramatically to treatment with cortisone, and the results of tests became positive one week later and have been positive ever since.

FIBROUS CAVERNOSITIS

TO THE EDITOR:—*Please give me information on the etiology and treatment of plastic penitis.*

J. B. Eviston, M.D., Huntington, Ind.

ANSWER.—The penile lesion referred to in all probability is that which usually is termed fibrous cavernositis (Peyronie's disease). This lesion is generally regarded as a result of chronic inflammation in the sheaths or intracavernous septums of the corpora cavernosa. One or more fibrous plaques may result which are readily palpable in the shaft of the penis as firm nodules of variable size and form. The lesion often causes penile deformity when in erection and may be the cause of pain. The fibrous plaques usually can be distinguished from gumma or malignant lesions by their intense hardness and by the absence of clinical data which usually accompany syphilis and penile neoplasm. As a rule the fibrous process gradually becomes circumscribed and the local symptoms subside. Good results have been obtained in some cases by surface applications of radium. A mixture of tocopherol acetates (tofaxin®) in a dosage of 50 mg. three times daily has been advocated recently and has had variable results. This drug consists largely of synthetic vitamin E and theoretically is supposed to favor the absorption of scar tissue. Surgical excision has been employed, but the results obtained often have been unsatisfactory.

RESIDUALS OF CEREBRAL EMBOLISM

To the Editor:—*A professional man, 47, had a complete right hemiplegia 11 months ago following digitalization for paroxysmal auricular tachycardia. Cerebral embolism was diagnosed. Complete return of function of the extremity occurred immediately following procaine injections of the left cervical sympathetic nerves. At present the only residual evidence of the hemiplegia is weakness of the extensors and adductors of the fingers and thumb, with slight numbness of the skin of the distal phalanges. Will exercise of these muscles eventually improve their function? What medications will be of value? At the time of the hemiplegia aphasia occurred. There has been improvement in speech in the last few months, but the patient still has difficulty in pronouncing many words and in writing, although the facial, pharyngeal, and lingual muscles appear normal. Will speech exercises further improve his speech?*

M.D., Michigan.

Answer.—Continued use, manipulation, and exercise of the affected thumb and fingers is the only form of treatment that is likely to prove beneficial, and it may be of great assistance. It should be done many times every day. The exact method followed matters little, as long as all joints of the affected parts are carried through a full range of all possible movement at frequent intervals. The same is true of exercise in improvement of the patient's speech. Again, it is not the particular form of exercise but its completeness and very frequent use every day that are important in the treatment. No medicine is likely to prove beneficial.

BANTHINE®

To the Editor:—*What is the chemical formula for banthine®? Are there any reports of this preparation's having caused pigmentation?*

O. S. Philpott, M.D., Denver.

Answer.—The descriptive formula of banthine® is beta-diethylaminoethyl xanthene-9-carboxylate methobromide. There are no known or available reports that this preparation may have caused pigmentation.

OINTMENT CONTAINING ERYTHROCYTES

To the Editor:—*Please send me the formula for and directions for using an ointment containing red blood corpuscles in the treatment of indolent ulcers?*

Henry D. Coles, M.D., Chicago.

Answer.—Many preparations of which the basic component is human red blood cells have been described. As good as any is that used by Murray and Shaar (Red Blood Cell Paste in Treatment of Ulcers and Chronically Infected Wounds, J. A. M. A. 125:779 [July 15] 1944). They prepare a red cell paste in the following manner. Seventy-five cubic centimeters of 1:1,000 hexylresorcinol solution is placed in a sterile pyrex beaker; 2.5 gm. of powdered tragacanth is dusted on the surface; a sterile covering is applied, and it is allowed to stand several hours until a gelatinous mass forms. This is then heated in a water bath for 20 min. at 100 C. After cooling, it is removed from the beaker with a sterile spatula and 30 gm. is added to a sterile bottle containing 250 cc. of packed red blood cells. This is thoroughly mixed and stored at 2 to 5 C. After cleansing the wound with isotonic saline and dry gauze, a thin film of the red cell paste is applied with a sterile cotton applicator, allowed to dry, and then covered with a sterile dry dressing. The wound is dressed once or twice daily, depending on the condition and progress.

TETANUS ANTITOXIN AND BURNS

To the Editor:—*What is the indication for or against tetanus antitoxin or tetanus toxoid in industrial burn cases, for electrical, chemical, and ordinary burns?*

J. M. Hesser, M.D., Benson, Ariz.

Answer.—Currently in much of industry neither tetanus antitoxin nor toxoid is administered after any injury except in special situations. This practice applies to burns as well as to other injuries. The exceptions derive oftener from the place of the workman's residence rather than the type of work itself. When workmen reside on farms or are otherwise around animals antitetanic agents may be administered. Workmen such as plumbers, sewer mechanics, and animal handlers customarily are given tetanus antitoxin or toxoid. The reason behind this growing tendency against use of these agents is, on the one hand, the low incidence of tetanus in industry, and, on the other, the relatively high frequency of untoward results from the antitoxin in itself. In any instance, toxoid would be employed only as a booster injection following known previous administration. While these statements are applicable to all industrial injuries, the tendency to make use of tetanus antitoxin or tetanus toxoid is even less in the instance of burns of any nature.

FRUIT JUICES AND ATOMIC BURNS

To the Editor:—*In the issue of June 2, 1951, page 508, there was a question posed with reference to the potassium intake and the treatment of burns. Your answer was not entirely satisfactory from all points of view. In the early stages of extensive burns, the serum potassium concentration may be sufficiently elevated. It is unwise, and may even be dangerous, to give patients additional potassium at that time. When there is any interference with renal function because of diseases of the kidney or secondary to shock syndrome, administration of potassium is definitely contraindicated. Orange juice contains approximately 200 mg. of potassium per 100 cc. Grapefruit juice contains approximately 150 mg. of potassium in each 100 cc. While small amounts could obviously be tolerated by most persons, the excessive uses of these fruit juices, by the allowance of a pitcherful at the bedside, leads to the consumption of extraordinarily large amounts of potassium. Thus, there is the equivalent of 30 milliequivalents in the average quart size pitcher. Attention should be drawn to this factor in the treatment of extensive burns of any type, and any evidence of interference with renal function should call for a definite review of the dietary constituents.*

Herbert Pollack, M.D.,
70 East 77th St., New York 21.

To the Editor:—*The answer to the question concerning contraindications to the use of orange and grapefruit juices in the treatment of burns, atomic or otherwise, because of the high potassium content of these juices was correct. However, for completeness, an addition should be made to the answer referring the questioner to the paper by Rosenthal and Tabor (Electrolyte Changes and Chemotherapy in Experimental Burn and Traumatic Shock and Hemorrhage, Arch. Surg. 51:244 [Nov.-Dec.] 1945). They stated: "Fruit juices, because of their high potassium content, are definitely harmful in experimental shock. An experiment in tourniquet shock demonstrated that 5 per cent body weight of orange juice by mouth was rapidly lethal."*

Henry N. Harkins, M.D.,
University of Washington
School of Medicine,
Seattle 5.

SEVERE DRYNESS OF MOUTH

To the Editor:—*In the discussion of the causes and treatment of "Severe Dryness of the Mouth" in Queries and Minor Notes, June 30, 1951, no mention is made of the patient's blood count. In the presence of hypochromic anemia, mouth dryness and dysphagia may be part of the Plummer-Vinson syndrome. A careful review of such factors as chronic blood loss or destruction, dietary iron deficiency and gastrointestinal inadequacy, particularly achlorhydria, may reveal both the etiologic and therapeutic factors. It should also be pointed out that dryness of the mouth is not infrequently an isolated manifestation of deficiency of one or more components of the vitamin B complex. The presence of macrocytosis with normochromia or hypochromia would make this even more likely. The diagnostic and therapeutic suggestions made above would apply here also.*

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